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ABSTRACT

The employment of college graduates in Pakistan was studied along with socioeconomic conditions, unemployment, employment needs, and college enrollments. Surveys were conducted with employed graduates and post-graduates, graduates who were self-employed, unemployed graduates, students, educational institutions, and employers. Employers in 19 districts were surveyed, along with nine categories of industry. Colleges that were surveyed were: medical and law schools, home economics colleges, commerce colleges, colleges of education and research, engineering colleges, post-graduate degree colleges, and universities. Background information on Pakistan is considered, including: population trends; regional distribution of the population; resources (e.g., mineral); the economy; enrollments at the primary and secondary school levels; literacy rates; and numbers of school facilities. Employment and unemployment rates and projections for 1983-1988 are examined. Attention is directed to demand for higher education, financing college, career planning and transition to work, interaction between college and occupations, labor mobility, and earnings. Implications of the findings for higher education planning are addressed. (Over 100 tables are provided). (SW)

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Higher education and
employment opportunities
in Pakistan

by Tahir Husain
Bikas C. Sanyal
Mohammad Hashim Abbasi
Shahrukh Rafi Khan

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International Institute for Educational Planning

Higher education and employment
opportunities in Pakistan

This study is part of the IIEP research project on 'Higher education and employment', directed by Bikas C. Sanyal

IIEP Research Report No. 60

Higher education and employment opportunities in Pakistan

Tahir Husain

Bikas C. Sanyal

Mohammad Hashim Abbasi

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A study undertaken jointly by the IIEP and the Ministry of Education of Pakistan

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The IIEP research project on higher education and employment

The rapid expansion of education in the countries of the Third World has in some respects created as many problems as it has solved. At the higher levels of education, we often find a considerable discrepancy between the output of graduates in different specializations and the absorptive capacity of the labour market leading, in turn, to unemployment and under-employment of certain types of graduates. In qualitative terms, questions are being raised as to whether the content and performance of systems of higher education are able to meet the changing needs of society, including the new and changing methods of production in the labour market.

These discrepancies are in need of exploration, understanding and remedy. The high unit cost and opportunity cost in higher education, the particular social and political significance of universities and university students, and the responsibility of the higher education system in guiding and developing other levels of education make it imperative that a special effort be directed towards the analysis of both the qualitative and quantitative discrepancies that have developed in the higher education system and towards the exploration of possible means to correct them.

It is in this context that the International Institute for Educational Planning, during its past two Medium-Term Plans, carried out a research project to relate the development of higher education within a selection of countries to the changing needs of the employment market, in both quantitative and qualitative terms, so as to improve the basis for planning the development of higher education and to reduce the mismatch between the type of training offered by the institutions and the types of skills needed by the labour market.

The project had the aim of providing a knowledge-base for formulating educational policy oriented towards the employment needs of the country. The immediate objectives of the project were:

- (a) to identify the role played by the education system in general, and the higher education system in particular, in the overall socio-economic development of the country and, conversely, the influence that the social, cultural and economic factors have exerted in the development of the education system;
- (b) to identify the inconsistencies, both quantitative and qualitative, that have developed in the past in the education system and suggest measures to rectify them;
- (c) to throw light on the main variables to be considered in formulating policies of intake to different disciplines and institutions;
- (d) to identify the factors which intervene in the implementation of such policies and suggest some ways of minimizing the effect of these factors;
- (e) to develop a system of indicators to be used by the national policy-makers, the university administrators, potential employers, and the students, for decision-making;
- (f) to create a data-base for researchers in educational planning, particularly in the area of employment.

Research was launched in twenty-one countries around the world to meet the above objectives in each case. This involved desk studies and surveys of the different target groups.

The present study on the relationship between higher education and employment in Pakistan is the result of a co-operative research project between the International Institute for Educational Planning (IIEP) of Unesco and the Ministry of Education, Pakistan. This study, the first of its kind in Pakistan, is therefore of special significance for the planners and policy-makers of the country as well as of other developing countries facing similar problems.

The preliminary results of the research were the subject of review at a national workshop held in Islamabad in July 1984 and which was attended by many educational decision-makers from various universities, provincial and central government, as well as employers' representatives and a team of international experts. Comments and suggestions made by the participants in the workshop were taken into account in finalizing the study. Interest was also expressed by the Ministries of Planning and of Labour and Manpower in the implications of the findings of this study for the formulation of policies and plans for higher education and employment.

We are deeply grateful for the financial support given to the IIEP for this study and which was provided by voluntary contributions from Canada (CIDA), Norway (NORAD) and the United Kingdom (ODA). The Ministry of Education of Pakistan provided local costs.

It should be stressed that the research has been a major co-operative effort, enjoying the active support of the Pakistan Institute for Development Economics (PIDE), the University Grants Commission and the Academy of Educational Planning and Management, Pakistan. The contributions to the different chapters were much appreciated (Sirajuddin Ahmed, A. Husain, A. Ghafoor, A.R. Kemal, M. Irfan, Rehana Siddiqui and M.A. Beg) and special thanks go to Dr. Tahir Husain (Vice-Chancellor, University of Azad Jammu and Kashmir), Dr. Mohammad Hashim Abbasi (Joint Educational Advisor, Ministry of Education), and Dr. Shahrukh Rafi Khan (Pakistan Institute of Development Economics) who jointly, together with Dr. Bikas C. Sanyal (IIEP staff member), were responsible for implementing this study.

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Introduction

Research on the relationship between education and employment has received significant attention in recent years among educational decision-makers, planners and administrators. It is now well recognized that simple quantitative forecasts of manpower needs cannot provide precise enough orientation for the development of the education system, and the relationship between education and employment can no longer be based on such forecasting models alone. Many other factors intervene in this relationship some of which are unknown; others are too complex to be precisely articulated. Researchers need to look into this unknown and complex area, particularly at a time when the problem of unemployment among youth is becoming more and more critical. Open unemployment has been increasing at a very fast rate in almost all countries, except those where the economic recession has not been serious. However, the number of such countries is very few and limited to the oil-exporting countries.

The problem began to increase in magnitude in the seventies. Although economic stagnation was believed to be the main cause, it was also felt that many other factors, i.e. sociological, psychological, administrative and organizational were contributing, which researchers had to identify in order to provide new tools for decision-makers to remedy the unemployment problem. However, such research has not always followed the same conceptual framework; different points of view about the relationship between education and employment have been the basis for different types of research. At one extreme, there is the point of view that the relationship between education and employment is artificially imposed by society and vested interests play a dominant role to

maintain the 'status quo', thus perpetuating social hierarchy, discrimination and segmentation in society. At the other extreme, it is held that educational systems could be reformed to provide skills to meet social and economic development needs, as well as to meet individual expectations for upward social mobility, without going into the socio-psychological complexity of the relationship, reducing the analysis to the traditional quantitative forecasting exercises.

We have attempted to take into account the influence of the social structure on the development of education in relation to employment, based on the belief that reform measures, if properly planned and implemented, can reduce the problem of unemployment. A combination of two approaches has been utilized, as described in the following section.

1.1 The conceptual framework of the relationship between education and employment

It is argued that interdependence between educational development and the overall socio-economic development of a country in general, and development of employment in particular, calls for an analysis of natural, physical and human resource potential. To develop each region in a balanced way, the strategy adopted by a country should take account of whatever natural resource potential is available in that region. The process of exploitation and choice of technology will be determined *inter alia* by natural resource potential, whose exploitation needs skills which must be provided by the education system. The way in which these resources are exploited therefore influences the educational development strategy in structure and content. It is also dependent on the available and potential physical resources such as building equipment, transportation and communication facilities, whose development depends in turn on the development of education and vice versa. An analysis of physical resource potential is also therefore an important task in ascertaining the role of education in the overall development strategy of a country.

In the analysis of the development of human resources, the traditions, customs and beliefs cherished by the people cannot be ignored. Demographic changes influence the human resource potential as well. Education has to be planned in such a way as to develop this human

resource potential in order to respond to the needs of the social and economic development of the country, while considering the expectations and attitudes of the people. An analysis of human resource development is therefore an additional imperative in the overall analysis of the relationship between higher education and employment.

Conditions of work, and recruitment and promotion policies of the employment market influence the type of qualifications that employees have. A full employment policy guarantees a job for every individual, but in countries where this policy does not prevail, individual initiative is necessary to obtain employment. Therefore, the development of human resources is dependent on the operation of the labour market and the prevailing employment policy. A policy of human resource development for economic and social needs calls for an analysis of the skills needed for the various activities of the economy. Equally, output of the education system, by type of skills taught, has to be known for proper utilization of the human resources it generates. Before the education system can be planned in respect of intake, content and structure, it is only logical that demands for skills in quantitative terms should be estimated beforehand to whatever extent possible. These estimates of demand—which traditionally have been called manpower demand, but in our conception are broader because of the consideration of the qualitative aspects—are susceptible to inaccuracy due to economic uncertainties and the changing nature of the perceptions, attitudes and expectations of the different segments of the society. However, some guidance is needed as to the direction that the development of education in general, and higher education in particular, should take in quantitative terms to cater for the future needs for skills and avoid unemployment or underemployment.

It is considered that these estimates, if properly prepared, can provide such guidance. They can be checked against the actual values to identify the degree of inaccuracy and to form a checklist of missing parameters and variables. They are also useful for setting the foundation of the strategy for the development of the structure and organization of the education system.

It is assumed that where higher education is concerned the estimates are easier to make, because of the increased degree of correspondence between the skills imparted and those needed on the job. As regards the problems of estimating future needs for highly qualified manpower, an analysis of the matching between the quantity of trained

people and the quality of the training content demanded by the economy and responsiveness of the institutions of higher education becomes particularly useful. This analysis of matching brings out the shortcomings of the education system, not only quantitatively but also qualitatively. Such careful diagnosis of the education system forms the basis of any future strategy for the higher education system. It also provides a yardstick for achievements in restructuring the social system through change in the educational system, and illuminates the problems encountered in achieving the targets of socialization and equality of opportunities in the world of work. These problems may be seen in the various education 'paths' of different population groups, which result in the different working opportunities in the labour market.

The above conceptual framework gives us a macro approach to the analysis of the relationship between education and employment involving society as a whole, the economy, the labour market and the education system.

What is more important however are the micro aspects of the relationship. In the analysis of the relationship between higher education and employment, we are concerned with individual human beings and individual enterprises. Their background, attitudes and expectations play an important role in this relationship. What goes on in the labour market is a reflection of the social structure, including the educational system. The economy and society, the human resource potential of the country and the prevailing education system influence the behaviour, attitudes and expectations of individuals, their families, community, and their early educational history. These factors again directly influence the expectations of each individual in respect of his or her social role, as does the operation of the labour market through its selection criteria, recruitment practices, labour market information system, etc. But occupational expectations are also indirectly influenced by resource potential, the economy and society and the educational system through individual characteristics (sibling position, family size, parents/guardians' occupation, education and income), community characteristics (home region, religion, ethnicity, tribe) and early educational history (type of school, type of education, academic performance, etc.).

Similarly, motivation in respect of education is generated directly by motivation in respect of occupation, the functioning of the education system, the individual, family, community and early educational characteristics, and indirectly by the resource potential, economy and society.

It is considered that if a society is to be democratized, the education system, the economy and society have to give emphasis to changing micro characteristics so as to generate egalitarian occupational and educational expectations which would then lead to egalitarian educational and occupational careers for individuals.

Educational careers, in addition to the above factors are directly influenced by educational and occupational expectations. Factors of importance are the type of institution attended and its location, field of study pursued, academic performance, etc.

Similarly, occupational careers depend directly upon the educational career, the labour market situation, occupational expectations, and individual, family, community, early educational and occupational characteristics, and indirectly upon the economy, society, resource potential and the education system. Factors of importance in occupational careers are the type of career information received, placement services used, recruitment methods and selection criteria used, waiting period to obtain a job, type of post held, type of firm, location, salary, job satisfaction, and utilization of training/education on the job. Information on some of these items falls within the domain of the employers and needs to be checked with them to find whether the experience of the graduates matches with the employers' perceptions.

The basic thrust of our approach is that the education system, within the broader context of the society to which it belongs, can change the characteristics of the individuals, their families and community, so as to make the transition from institutions of higher education to the labour market smoother.

1.2 Higher education and employment in Pakistan and the objectives of this study

The above approach has been applied to analyze the relationship between higher education and employment in 21 countries of the world, including Pakistan, within the framework of the research programme of the International Institute for Educational Planning during its last Medium-Term Plan (1978-83).

Pakistan's decision-makers are concerned with the role that higher education can play in the overall social and economic development of the country. The connection between higher education and employ-

ment is an important component of that role, according to the conceptual framework described above. Research undertaken in the country to analyze this role has so far been limited to rather fragmentary and incomplete manpower forecasts, while the knowledge-base on the role of micro characteristics in the relationship between higher education and employment is almost non-existent. It was therefore proposed to undertake a study with the global objective of identifying ways and means to match the development of higher education with the socio-economic needs of Pakistan. The specific objectives were:

- (a) To examine the socio-economic framework of the country and the role that higher education can play in its development.
- (b) To analyze the nature and extent of the problem of unemployment and its relationship with higher education in quantitative terms.
- (c) To analyze the manpower needs of the economy in broad terms in order to identify implications for development of education.
- (d) To examine the development and operation of the higher education system in quantitative and qualitative terms with a view to identifying measures for corrective action.
- (e) To identify the areas of mismatch in quantitative and qualitative terms between the expectations of students, graduates and employers in respect of the system of higher education in general, and its relationship with employment in particular, and the achievements. Such identification could help in reducing the mismatch.

In order to achieve these objectives the investigation followed the conceptual framework described in the previous section. Such a framework needs a large amount of data, only a part of which was available in published documents. The published data relate to the socio-economic framework of the country, the problem of unemployment, manpower needs and the quantitative development of higher education. But most of the data, concerning the operation of the employment market and the system of higher education, and the data on mismatch,

had to be collected through surveys. The description of these surveys is given in the next section.

1.3 The samples and instruments

Six different target groups were selected for the study: (1) employees (graduates and post-graduates), (2) students, (3) unemployed graduates, (4) self-employed graduates, (5) educational institutions, and (6) employers.

Questionnaires were designed for the six sample groups and initial drafts were administered on a pilot basis to small local samples drawn in each case from Islamabad and Rawalpindi areas. In the light of feedback, the questionnaires were refined. The range of items included in the questionnaires for employees, students, unemployed and self-employed graduates included individual background, educational career, institutional experiences and, where applicable, employment experience. Parts I and II of the questionnaires (personal background and institutional interaction) were common to students and all categories of graduates; Part III varied from sample to sample.

A description of the samples drawn from the six target groups is given below:

1.3.1 Employees

This sample included employees (graduates and post-graduates), from various disciplines, who had completed their studies in the mid-seventies and entered the labour market in various professional/occupational groups. They were asked to recount their educational experience, first job in the labour market and their transition from one occupation to another both vertically and horizontally, methods of recruitment, incentives in terms of training, service benefits, and related aspects of career planning with special reference to their experience in the labour market.

The conclusions drawn from this group could contribute to improving educational programmes and recruitment procedures in the labour market.

1.3.2 Students

The second sample related to final year students of graduate and post-graduate programmes in different disciplines. The students were asked about their educational experience and perceptions concerning their expected occupational roles.

1.3.3 Unemployed graduates

The third sample was drawn from unemployed post-graduates from the same disciplines. They were asked to relate their educational experience and conditions of the labour market in which they were seeking employment.

1.3.4 Self-employed graduates

In addition to giving their educational experience, self-employed graduates were asked about their reasons for taking up self-employment and their professional and career experience. The concept of 'self-employment' is relatively new in occupational research and is considered worthwhile studying so as to be able to generate the conditions for self-employment in various occupations and reduce unemployment.

1.3.5 Educational institutions

The sample consisted of those educational institutions which the graduates surveyed for this study had attended. They were largely institutions offering programmes in medicine, engineering, commerce, general science, and humanities. The institutions were asked to provide data on the level and nature of courses offered, admission policies, streaming, teaching, evaluation, inter-institutional linkages, and interaction with the labour market. The purpose was to obtain information on how educational institutions could meet both the aspirations of students and the needs and priorities of national programmes, and at the same time serve as a bridge between prospective graduates and the employing agencies.

1.3.6 Employers

The sample consisted of public and private employers. They were requested to define the extent of employment offered, range of skills covered, their expectations about graduates, and linkages with educational institutions.

1.4 Sampling method used

For the purpose of this study, a stratified random sampling procedure was adopted for the enterprises and educational institutions. The sample selected by this procedure is representative of the universe only when the latter is homogeneous. The whole population is stratified in such a way that sample units in each stratum are similar to each other insofar as possible. Furthermore, a sample is selected at random from each of the strata. Stratified random sampling, in addition to eliminating error between the strata, reduces the error due to heterogeneity of the data and increases the precision of the result. The details of the stratification procedure are given below.

1.4.1 Stratification procedure for the employing institutions

Employing institutions have been stratified at two levels.

- (a) The first stratifying factor was area (district). Five major districts (Lahore, Faisalabad, Multan, Hahawalpur, Rawalpindi) have been sampled from Punjab, seven (Sukkur, Nawabshah, Hyderabad, Dadu, Karachi Division) from Sind, five (Abbottabad, Peshawar, D.I. Khan, Bannu, Mardan) from North West Frontier Province, one (Quetta) from Baluchistan, and the Federal Capital area.
- (b) The second stratifying factor was industrial groups. These were taken from the published List of Establishments employing ten or more workers in 1977/78, as follows:
 - (i) Agriculture, hunting, forestry and fishing
 - (ii) Mining and quarrying

- (iii) Manufacturing
- (iv) Electricity, gas and power
- (v) Construction
- (vi) Wholesale/trade, business, hotel and restaurants
- (vii) Transport, storage and communication
- (viii) Financing, insurance and real estate
- (ix) Community, social and personal services

The eighth group was not sampled because there were only branch offices located in the different areas which could not provide the required information. Therefore, only their head offices were selected. Ten per cent of establishments selected at random from each district and industry were included in the sample.

1.4.2 Stratification procedure for educational institutions

Educational institutions were stratified at two levels:

- (a) The first stratifying factor was area (district)
- (b) The second was type of educational institution and the following types were included on the sample:
 - (i) Medical colleges
 - (ii) Law colleges
 - (iii) Home economics colleges
 - (iv) Commerce colleges
 - (v) Colleges of education and research
 - (vi) Engineering colleges

(vii) Post-graduate degree colleges

(viii) Universities

Fifty per cent of colleges from each district and for each type were selected. In the case of universities, almost all subjects offered by the different institutions were included in the sample. While 50 per cent of universities for each subject/faculty were selected at random, in cases where any subject/faculty was offered in only one university complete enumeration was undertaken.

The University Grants Commission's publication entitled 'Statistics on Higher Education in Pakistan 1976/77-1980/81' was used for drawing the sample of educational institutions.

The students were selected from the educational institutions. Consultation with employment exchange offices and informal contacts were the means of finding the addresses of unemployed graduates. Professional associations and the Chamber of Commerce were the contact points for the self-employed graduates.

1.5 Collection and analysis of data

For Sind, Punjab and Baluchistan, the data were collected through the network of Provincial Curriculum Centres, and for North West Frontier Province (NWFP) through the Primary Education Project. The Central Bureau of Education collected data from the Federal Capital area and Rawalpindi. After a general session with the provincial co-ordinators at Islamabad, the investigation teams visited each province to explain the purpose of the study, the samples selected, the use of the instruments and method of collecting data. It took 8-10 months to complete collection of the data. Of a total sample size of 8,750, 5,066 returns were recorded, with a response rate of about 58 per cent (see Table 1 for details). The data were processed at the Quaid-i-Azam University computer centre.

In addition to survey data, detailed background information was collected from published documents on the macro aspects of the study following the conceptual framework of the research given above.

Table I: Sample size and response rates

Instrument	Sample size	Returns	Percentage
A-I (Employees)	4400	2671	61.0
A-II (Students, Final year)	2000	1489	74.0
A-III (Unemployed graduates)	625	260	42.0
A-IV (Self-employed graduates)	625	201	32.0
B (Educational institutions)	220	146	66.0
C (Employers)	880	299	34.0
TOTAL	8750	5066	58.0

1.6 Organization of the research and structure of the study

The national research team organized a four-day preliminary workshop at which researchers from different provinces submitted papers on the problem of higher education and employment, as perceived by them. Based on a review of these papers, and others related to the subject, the research questions were formulated and the questionnaires prepared.

During the survey work provincial teams were formed, as mentioned in section 1.5. Most of the background papers dealing with the macro aspects of the relationship between higher education and employment were prepared by the national experts and a team of

researchers from different national agencies participated in analyzing the survey data.

The results of the research were discussed at a review workshop in Islamabad. Senior government officials, members of the academic community, employed graduate community, and the employers participated in the workshop. The comments and suggestions received were used to revise the study. The present report is the final outcome.

The presentation of the report has been based on the objectives of the study given in section 1.2. The analysis of the socio-economic framework of the country is dealt with in Chapter 2. The problem of educated unemployment is discussed in Chapter 3. Chapter 4 gives the manpower forecasts by economic sectors, followed in Chapter 5 by an analysis of the development of the higher education system in quantitative and qualitative terms. For the qualitative aspects, survey data from the academic institutions have been analyzed and incorporated. Chapter 6 analyses the functioning of the labour market with special reference to the selection criteria, recruitment practices, promotion policy and the reward system; also analyzed is the functioning of the higher education system as perceived by students, graduates of different types, and employers. The role of individual, family and community characteristics in the development of educational and occupational career has also been discussed in Chapter 6. The concluding chapter deals with implications for policy in higher education, based on the findings of the different chapters, in order to meet the global objective of improving the relationship between higher education and employment in Pakistan.

1.7 Limitations of the study

One of the main limitations of the study was the unavailability of data on manpower demand by field of specialization and level of education. This obliged the authors to concentrate more on the qualitative aspects of the mismatch between higher education and employment, for which special surveys were conducted for the first time in the country. However, the alternative estimates of manpower demand by industrial sector and the availability of human resources convey the impression that in quantitative terms the problem of unemployment is not serious. In fact problems are more structural and of a socio-psychological

nature. This increases the importance of the surveys, although they also had limitations, as mentioned below.

Sometimes the respondents were asked to recall their past and thus there is the risk of 'recalling error'. This was not so serious with the students who did not have to recall facts too far in the past, but with the graduates we cannot be sure of the extent of such error when asking, for example, what they had wanted as an occupational career after graduation from secondary school—which in some cases had occurred at least ten years beforehand.

Although we had kept an 'open' item in the questions, little convergence could be obtained on responses. Most of the respondents did not have any item to add to the list. Although identification of the items had been done with extensive consultation among national researchers and sometimes with pre-testing of the questionnaires, the extent to which questions were closed could bias response. We could not estimate the extent of such bias, so there could be 'identification error' in the responses.

The non-response rate for items like father's income, and in general for employers and unemployed and self-employed graduates, was very high thus reducing the representativeness of the samples. Therefore the results could also be biased due to 'non-response error'.

Another problem concerns the validity of attitudinal surveys. The answers obtained from surveys asking the opinions and perceptions of individuals can vary according to the context of the survey or even the phrasing of the question. Yet another difficulty stems from the fact that motivations are seldom of one type only and to present the results in terms of mutually exclusive one-sided answers would result in oversimplification.

There is also a division of opinion amongst researchers in respect of the mode of framing the questions: some suggest that questions on attitudes and motivations should be put in a conditional way if frank responses are to be obtained. Others opine that conditional questions are most difficult to interpret because the respondents tend to answer them positively to satisfy the investigator.

These problems were discussed at a methodological workshop held at IIEP. It was agreed that, although the importance of some of the findings becomes reduced because of the above difficulties, attitudinal surveys are nonetheless the only way so far developed in social sciences to examine some of the important issues in the field of educational

planning in relation to employment. One of the principal problems in conducting the surveys of unemployed graduates was in tracing them. Since very few post-graduates register with employment exchanges, field workers had to rely on friends and associations to obtain addresses. The sample covered only those institutions where such contacts existed. Thus for the educated unemployed the findings are at best suggestive. It is with these limitations in mind that the authors put forward the findings of this research in Pakistan together with possible implications for policy.

2. The socio-economic framework of Pakistan

2.1 Land and people

Bounded to the west by Iran, to the north by Afghanistan and the USSR, to the north-east by China and the south-east by India, the Islamic Republic of Pakistan covers an area of approximately 800,000 square kilometres. The total population was 89.73 million in mid-1983, having increased at an annual average rate of 3.1 per cent during the period 1972-83.

The population of present-day Pakistan is a complex mixture of indigenous peoples, migrants from the north-west and from India. Among the migrants, Aryans, Persians, Greeks and Moguls came to Pakistan from the north-west at different points of time and left their mark on the population and culture of the country. The Indus civilization flourished some five thousand years ago. The Indo-Aryans who predominate in contemporary Pakistan arrived between 1500 and 1200 B.C. The Persian Empire covered the Indus Valley in the 6th century B.C., followed by Alexander the Great in the 4th century B.C. The Maurya Empire also dominated around the 4th century B.C.

During the long period of pre-British Moslem rule, immigrants also came from the Middle East and settled as members of the ruling class. Many of the landlord and upper class families of today descend from these immigrants. Present-day Pakistan was, in some ways, the root of the culture that extended over the whole region in ancient times—a culture which still pervades the life of the people in the sub-continent. In 1947, when Pakistan and India acquired Independence,

millions of Moslem refugees were uprooted from different parts of India and settled in Pakistan, as did almost an equal number of Hindus leave Pakistan to settle in India. With the secession of the Eastern Wing in 1971 as an independent nation, now called Bangladesh, some further changes in population—although to a much lesser degree—took place between the two countries.

Pakistan has four provinces—Baluchistan, North West Frontier Province (NWFP), Punjab, and Sind. The country's capital, Islamabad, is a Federal territory, geographically located in the Punjab province (see Map 1). The majority of the population (97 per cent) are Moslems.

Regional distribution of the population is uneven. The fertile Indus Valley has the highest density, whereas the mountainous and arid Baluchistan has the lowest density (see Table 2). The urban population is increasing at a rate of 4.3 per cent per year. In 1982/83 it accounted for 29 per cent of the total population; the corresponding figure for 1970 was 25 per cent. Greater urbanization has resulted in faster growth of large cities, as compared to smaller ones, due to the installation of industries. The age distribution of the population has remained more or less the same during the period 1970-80 for the age groups 0-14 years (46.3 per cent), 15-64 years (50.5 per cent in 1970 and 50.9 per cent in 1980), and 65 and over (3.2 and 2.8 per cent respectively in 1970 and 1980). As mentioned above, the population of Pakistan is growing at a very high rate of 3.1 per cent per year—the highest growth rate in the region. An extensive family planning programme did not achieve the expected success in controlling population growth.

The rapid population growth calls for provision of education for an increasing number of children. In 1981, the literacy rate was 24 per cent, 44 per cent of the population aged 5-9 years were enrolled in primary schools, of which 57 per cent were boys and 31 per cent girls. In the same year only 14 per cent of the population aged 10-16 were enrolled in secondary schools, comprised of 20 per cent boys and 8 per cent girls, and only 2 per cent of the age group 20-24 went on to higher education. These figures are very low in comparison with international standards.

One can also observe a very wide disparity in the participation in education between boys and girls. This disparity increases with the level of education. In 1981, 73.8 per cent of the population aged 15 years and over were illiterate; 64 per cent of males and 84.8 per cent of females, 53 per cent of urban and 82.6 per cent of rural origin were illiterate. According to the 1981 census, among the rural population



Map I: Pakistan

Table 2: Population estimates, 1974/75-1982/83(a) (in thousands) and areas

	Area (sq km)	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83
Total Pakistan (b)	796 095	69 826	71 949	74 099	76 313	78 593	80 941	83 360	85 851	88 416
Baluchistan	347 188	3 591	3 698	3 809	3 923	4 040	4 160	4 285	4 413	4 545
NWFP (c)	101 743	10 891	11 217	11 552	11 897	12 253	12 619	12 996	13 384	13 784
Punjab (d)	206 251	39 563	40 745	41 962	43 216	44 507	45 837	47 207	48 617	50 070
Sind	140 913	15 817	16 289	16 776	17 277	17 793	18 325	18 872	19 437	20 017
Urban (e)		18 284	19 075	19 900	20 760	21 658	22 595	23 572	24 591	25 654
Rural		51 578	52 874	54 199	55 553	56 935	58 346	59 788	61 260	62 762

(a) As of 1 January

(b) Provisional distribution estimated on the basis of 1981 Population Census distribution

(c) Population of federally administered tribal areas has been included in the province of the Punjab.

(d) Population and area of federal capital, Islamabad, has been included in the province of the Punjab.

(e) Urban population has been estimated for intercensal years and projected beyond the 1981 census period on the basis of intercensal growth of urban population between the 1972 and 1981 censuses (annual growth rate of 4.324 per cent).

Source: Federal Bureau of Statistics, Pakistan.

aged 15 years and over 92.7 per cent of females were illiterate.

The high rate of population growth increases the burden of the government in providing the basic facilities of livelihood, including education. Since Independence, Pakistan has attempted to improve upon the living conditions of the people through a process of planned development. The situation was worse in 1947 in certain areas of social development, and an improvement can be noted in these areas during the decade 1970-80. For example: private consumption increased by 6 per cent annually during this period; the number of television sets increased from 2 to 10 per thousand persons; per capita energy consumption increased from 82 kgs. to 218 kgs; infant mortality per thousand decreased from 143 to 126; the number of persons per physician decreased from 4,300 to 3,480; the percentage of the rural population with access to safe water increased from 4 to 17; daily per capita protein consumption increased from 58 to 61 grammes and calory intake from 2,210 to 2,310. Finally, life expectancy increased from 46 to 50 years. These are a few of the indicators of social development.

Thus development efforts have increased the quality of life but the rate of progress has been slow and, in most of the areas mentioned above, Pakistan is still behind many of the neighbouring countries in the Western and South-Asian region. One of the reasons given for this slow progress is high population growth. The role of education in improving upon conditions of life does not require any explanation. Moreover, it has been argued in the preceding chapter that education can provide the necessary skills for economic and social development for such tasks as exploring, exploiting, managing, distributing and conserving the resources a country possesses. As also indicated in the previous chapter, an analysis of the resource potential is the first step in identifying the role that education can play in development, and this is discussed in the next section.

2.2 Resources of Pakistan

Pakistan's resources, may be grouped into three categories, namely mineral, biological, hydro-electric and power resources.

2.2.1 Mineral resources

The country's coal reserves are estimated at 400 million metric tons, and those of iron ore at 520 million metric tons. Both coal and iron ore reserves are of poor quality. There is an enormous reserve of limestone which forms the basis of a growing cement industry. There are also reserves of chromite, barite, celestite (strontium sulphate), antimony, aragonite (a mineral resembling calcium carbonate), gypsum, rock-salt and marble. In addition, there is a reserve of radio-active minerals in the Punjab. Pakistan's first oil discovery was made in 1915; several other fields have since been discovered, but none are very important. There are some very large natural gas fields—one, discovered in 1953 at the border between Baluchistan and Punjab, ranks among the world's largest with a reserve of 180 billion cubic metres. Overall the country's natural gas reserves amount to some 460 billion cubic metres.

2.2.2 Biological resources

Pakistan's climatic and soil conditions are varied. Baluchistan is mostly desert, whereas Sind and Punjab in the Indus Valley have fertile land. The Himalayan foothills enjoy regular rain and snowfall. Consequently, Sind and Punjab have areas where crops and orchards are intensively cultivated, but in Baluchistan, where rainfall is low, vegetation is basically xerophilous. The coastline has mangrove forests and the Himalayan foothills have vegetation and animal life similar to the Mediterranean and Alpine types. The country also has marine resources.

2.2.3 Hydro-electric and power resources

Although the water resources in Pakistan are poor, its hydro-electric potential has been significantly developed. The Mangla Dam on the Jhelum river and the Tarbela Dam on the Indus have generating capacities of one million and 2.1 million kilowatts respectively. In addition, the country has a large number of thermal plants, most of which use coal and natural gas. There is also a nuclear power plant with a generating capacity of 137,000 kilowatts.

The above gives only some of the resources of which Pakistan is aware to date. With the development of exploratory science and technology it is expected that further resources will be identified in the future. In respect of energy, the non-conventional sources are yet to be explored. The transformation of barren land into arable land could thereby increase the cultivable land area, and development of marine sciences might help identify new oceanic resources and improve management of existing resources. Development in agricultural science and technology has already made the country self-sufficient as far as food is concerned. Pakistan also has to participate in the new technological revolution, especially information technology, in order to keep pace with others in the developing world in respect of economic and social development.

The country's economically active population increased from 19.5 million in 1972/73 to 27.4 million in 1982/83 with an average growth rate of 3.4 per cent. More than half were engaged in agriculture and 14 per cent in the manufacturing sector. The rate of increase in the economically active population in the manufacturing sector has been higher than in agriculture. The largest increase is observed in the service sector. The number of unemployed among the economically active population has increased by 40 per cent during the decade 1972-82 (see Table 3) despite the fact that labour force participation rate is low, having decreased from 31.5 per cent in 1960 to 30.2 per cent in 1983¹ and the female participation rate in the labour force is also deplorably low at 6 per cent. A large amount of human resource potential remains untapped.

The structure and performance of the economy, which essentially depends upon the above resources, is discussed in the following section.

¹ See Annex to Chapter 4.

Table 3: Economically active population by major industry, 1972/73-1982/83 (in thousands)

	1972/73	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83
Agriculture, hunting, forestry and fishing	10 956	11 285	11 002	11 308	11 628	11 948	12 274	12 642	13 131	13 526	13 934
Mining and quarrying	86	89	30	31	32	33	32	35	35	36	37
Manufacturing	2 383	2 455	2 736	2 886	3 045	3 211	3 385	3 486	3 621	3 730	3 843
Construction	652	671	843	911	983	1 062	1 147	1 181	1 227	1 264	1 302
Electricity, gas and water	71	73	96	113	130	150	172	177	185	190	195
Commerce	1 891	1 947	2 227	2 311	2 398	2 489	2 583	2 660	2 763	2 847	2 932
Transport, storage and communications	925	953	978	1 009	1 040	1 070	1 102	1 136	1 179	1 215	1 251
Financial institutions and insurance	164	169	135	150	164	181	200	206	215	220	228
Services	1 389	1 431	1 964	2 055	2 149	2 250	2 355	2 425	2 519	2 594	2 672
Activities not adequately described	596	614	66	66	65	64	63	65	67	69	71
Unemployed	398	410	346	461	583	713	857	883	917	944	973
Total	19 511	20 097	20 423	21 301	22 217	23 171	24 170	24 896	25 859	26 635	27 438

Source: Federal Bureau of Statistics, Pakistan

2.3 Structure and performance of the economy of Pakistan

The economic development of Pakistan has been based on five-year development plans. The First Plan (1955-60) expenditure targets were largely met, although production in agriculture fell short of the expected level. During the Second Plan (1960-65), GNP grew at an average annual rate of 5.5 per cent, thus exceeding the target rate of 4.7 per cent. Agricultural output rose by 3.5 per cent per year compared with 1.3 per cent during the previous plan period. The manufacturing sector expanded by 10 per cent per year. The Third Plan (1965-70) had a setback due to war with India, reduction in foreign aid, agricultural problems, and socio-political unrest. Export growth slowed down, and imports of capital goods and raw materials fell. The Fourth Plan, which was to cover the period 1970-75, was left in suspension due to the political disruption from 1970 to 1972 resulting in the secession of Bangladesh, and annual development programmes were adopted until 1978.

The Fifth Plan (1978-83) met with reasonable success. GDP at factor cost increased at an average annual rate of over 6 per cent. The manufacturing sector grew at an average annual rate of 10 per cent, agriculture at 4.7 per cent and the service sector at an annual rate of 6.3 per cent. A healthy sign was that the manufacturing sector, which acts as the motor of the economy, grew at the highest rate. This achievement was possible in spite of the difficulties confronting the country, i.e. deteriorated terms of trade (the indicator decreased from 111 in 1978 to 94 in 1983), the second oil crisis of 1979, international economic recession and the crisis in Afghanistan. It was due to the following factors: (1) record levels of production of cotton, rice and wheat, made possible by good weather, a timely supply of key imports, and remunerative prices for farmers; (2) record growth in value added in manufacturing due to liberalization of import policy, widening of the private sector with added incentives and safeguards against arbitrary government acquisitions, and (3) prudent management of public finances together with improved net inflow of financial resources, including workers' remittances from abroad which rose by 30 per cent in 1983 compared with an average annual rate of 17 per cent during 1979-82 (see Table 4).

Table 4: Workers' remittances by month, 1976/77-1982/83(a), in million US\$

	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83
July	33.5	81.6	105.0	122.0	190.6	149.0	191.6
August	33.4	95.4	108.4	129.1	165.4	177.4	239.3
September	33.9	75.1	104.6	115.0	170.7	160.3	191.1
October	38.6	90.8	134.9	139.1	146.6	157.7	232.1
November	43.4	78.2	111.1	103.7	186.7	169.9	251.7
December	37.9	91.4	95.4	147.5	196.5	195.8	243.2
January	58.8	105.1	139.0	168.9	180.1	177.6	259.2
February	47.1	93.6	109.5	164.7	167.5	191.4	246.2
March	65.1	110.7	123.4	168.3	189.3	230.8	296.4
April	75.2	109.0	124.6	167.0	198.1	204.9	256.3
May	57.2	117.7	122.8	168.3	177.2	213.5	242.6
June	53.7	107.6	119.0	154.0	128.5/b	196.8	229.9
Total	577.7	1 156.2	1 397.7	1 747.6	2 097.3/b	2 225.1	2 879.6

(a) Fiscal year ending June 30

(b) Revised

Source: State Bank of Pakistan

During the decade 1973/74 to 1983/84, the structure of the economy changed only to a limited extent (see Table 5). In 1973, agriculture represented 35 per cent of GDP and in 1983 it came down to 29 per cent, whereas manufacturing increased its share from 16 to 18 per cent during the same period. Industry as a whole (comprising mining, manufacturing, construction, electricity and gas) increased its share from 23 per cent of GDP to 27 per cent while the figures for the service sector (comprising all activities other than agriculture and industry) likewise increased, from 42 per cent in 1973 to 44 per cent in 1983.

Table 5: Gross domestic product at constant factor cost, 1973/74-1983/84(a), (in 1959/60 million Rupees)

	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84
Agriculture	13 357	13 074	13 659	13 998	14 364	14 861	15 859	16 464	17 007	17 826	18 708
Major crops	7 844	7 455	7 833	7 944	8 115	8 315	9 105	9 463	9 762	10 252	10 744
Minor crops	1 585	1 679	1 839	1 970	1 962	2 023	2 086	2 125	2 196	2 284	2 410
Livestock	3 724	3 799	3 875	3 993	4 129	4 281	4 441	4 616	4 806	5 033	5 270
Fishing	115	82	86	96	100	148	137	170	172	179	201
Forestry	89	59	26	45	58	94	90	90	71	78	83
Mining and quarrying	180	181	175	206	212	221	250	283	304	322	350
Manufacturing	6 101	6 136	6 231	6 260	6 833	7 163	7 890	8 672	9 701	10 507	11 480
Large scale	4 585	4 509	4 486	4 385	4 823	5 006	5 575	6 188	7 036	7 647	8 412
Small scale	1 516	1 627	1 745	1 875	2 010	2 157	2 315	2 484	2 665	2 860	3 068
Construction	1 490	1 754	2 094	2 076	2 248	2 371	2 644	2 755	2 816	2 952	3 262
Electricity, gas and water	1 068	949	985	1 143	1 244	1 366	1 531	1 698	1 777	1 894	2 064
Transport, Storage and Communications	2 466	2 575	2 605	2 649	3 023	3 268	3 487	3 766	4 006	4 200	4 452
Commerce	5 449	5 622	5 724	5 660	6 180	6 477	6 953	7 402	7 973	8 770	9 366

	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84
Financial Institutions and Insurance	879	1 006	1 039	1 124	1 256	1 337	1 312	1 302	1 400	1 507	1 618
Ownership of Dwellings	1 275	1 321	1 369	1 418	1 469	1 522	1 577	1 634	1 693	1 754	1 817
Public Administration and Defense	2 983	3 972	3 854	4 135	4 657	4 906	5 209	5 761	5 855	5 866	6 070
Services	2 653	2 803	2 964	3 060	3 319	3 510	3 711	3 924	4 149	4 387	4 637
GDP at Factor Cost	37 901	39 393	40 699	41 729	44 805	47 002	50 423	53 661	56 681	59 985	63 824
Indirect taxes less subsidies	2 799	2 640	3 302	3 856	4 345	3 798	5 400	6 424	5 697	6 615	7 213
GDP at Market Prices	40 700	42 003	44 001	45 585	49 150	50 800	55 823	60 085	62 378	66 600	71 037

(a) Fiscal year ending June 30. Figures for 1982/83 are provisional and for 1983/84 are targets.

Source: Planning and Development Division, Government of Pakistan.

Gross fixed capital formation, which consists of the outlays for additions to the fixed assets of the economy and changes in the net value of inventories, has, however, changed very little as a proportion of the expenditure on GDP—11 per cent in 1973 to 13 per cent in 1983. GNP per capita increased from Rs. 580 in 1973 to Rs. 791 in 1983 at constant 1959/60 prices. The trade balance however deteriorated from a positive Rs. 224 million in 1973 to a negative Rs. 33,487 million ten years later. Most of this deterioration is due to one single item, i.e. mineral fuels, which alone accounted for a negative balance of Rs. 19,922 million. Although exports increased, especially in basic manufactures (4 times) and miscellaneous manufactured goods (6.6 times), import of fuel increased by 31 times and import of machinery and transport equipment increased tenfold in terms of value during this period.

The current account balance moved from a positive US\$ 32 million in 1973 to a negative US\$ 178 million in 1983. The situation in 1983 was much better in this respect than for the preceding year when the balance was a negative US\$ 1,116 million. Total international reserves improved substantially from US\$ 479 million in 1973 to US\$ 2,729 million in 1983 and were equivalent to approximately four months of imports of goods and non-factor services.

Looking back, one can observe that Pakistan is improving its economic situation over time. The development plans of the sixties correctly emphasized the agricultural sector and brought about some radical changes in farming techniques, resulting in the 'green' revolution and making the country a net exporter of food by the early seventies.

The industrialization effort started in the fifties initially with the processing of domestic agricultural raw materials, which was followed by the setting up of cotton textile mills. The next step was the development of import substitution industries starting with consumer goods, followed gradually by intermediate goods like cement, chemicals, fertilizers, and a range of capital goods in the area of light engineering.

The structural change in the economy is also revealed in the composition of foreign trade. At independence, Pakistan was producing only raw materials. Today the country has a more integrated economy, processing and manufacturing its own raw materials both for export and for domestic consumption. Basic manufactures constitute the largest single export item in terms of value followed by food and live

animals. The destination of its exports has also changed over time. In 1970 Western Europe received the largest share of Pakistan's exports, followed by Asia and America (North and South combined). In 1983 it was the Middle East that received the largest share, followed by Asia and Western Europe.

Table 6: Planned and actual real growth rates, 1973-83. (Average annual growth rates)

	Fifth Plan 1973-78	Fifth Plan Target	Actual
Agriculture	2.3	6.0	4.4
Major crops	1.7	7.0	4.8
Minor crops	5.8	6.8	3.1
Other	2.1	3.7	4.3
Manufacturing	3.8	10.0	9.0
Large-scale	2.5	12.0	9.7
Construction	10.8	8.4	5.6
Trade and transportation	5.3	8.1	7.1
Other services	8.1	4.9	5.3
GDP at factor cost	5.0	7.0	6.0
GDP at market prices	5.0	7.5	6.3
GNP at market prices	5.4	7.2	6.3

Source: Planning and Development Division, Government of Pakistan.

Management of the economy has also evolved over time. At Independence the nucleus of a new industrial and financial society was set up in Lahore and Karachi with the help of displaced businessmen from India. The government supported a system of free enterprise and encouraged private domestic and foreign capital investment. It also

favoured private entrepreneurs in the allocation of foreign exchange, especially for the development of the manufacturing sector. However, the result was that industrial and financial power was concentrated in the hands of a small number of influential families, and this led to social unrest in the late sixties. In 1972 the government took over control of selected key industries and the insurance sector to remedy the situation. Favourable investment incentive schemes, including tax holidays, long-term credit facilities from national financing institutions, and repatriation guarantees for capital and profits, attracted foreign private investment in the country. Foreign saving accounted for 30 per cent of the gross domestic capital formation in 1970, 16 per cent in 1973, and again 30 per cent in 1982 (at current prices). Public sector investment concentrated at first on social programmes, e.g. education, health, etc., and on development of infrastructure, e.g. transport, communications and power; agriculture and industry were left in the hands of the private sector. Gradually the government has extended its investment coverage to the latter two sectors as well, but to a limited extent.

Organized labour in Pakistan, even though in the minority as a proportion of total employment, became on occasions an important political force during the last four decades. However, countrywide unions based on a common craft or industry are few. Most of the unions are situated in urban centres, affiliated to one of three national labour confederations which are in turn affiliated to the International Confederation of Free Trade Unions.

Taxes accounted for 74 per cent of central government current revenue which stood at Rs. 50 billion in 1983; current account deficit was Rs. 6 billion; capital expenditure amounted to Rs. 34 billion, with a deficit of Rs. 19 billion. The deficit financing was covered by foreign borrowing (Rs. 14 billion), use of cash balances (Rs. 6 billion), domestic borrowing (Rs. 4 billion), and foreign grants (Rs. 1 billion).

The Fifth Plan brought about some noteworthy improvements in national output, agriculture, industry and exports. These improvements, coupled with increased inflow of remittances from abroad, provided better living conditions for large segments of the population in both urban and rural areas. However, the achieved growth rates, although higher than for the previous five-year period, have fallen short of the planned targets, as can be seen from Table 6.

Table 7: Real growth rates during Fifth Plan 1978-83 : Sixth Plan targets for 1983-88. (Average annual growth rates)

	Fifth Plan Actual	Sixth Plan Targets
Agriculture	4.4	4.9
Major crops	4.8	3.6
Minor crops	3.1	7.0
Other	4.3	6.0
Manufacturing	9.0	9.3
Large scale	9.7	10.0
Other sectors	6.0	6.4
GDP at factor cost	6.0	6.5
GDP at market prices	6.3	6.5
GNP at market prices	6.5	6.4

Source: Sixth Plan

As mentioned before, one of the reasons for slower growth was shortage of domestic and external resources. Only about 70 per cent of the public sector development plan was implemented. The greatest scarcities in resources were experienced in agriculture, power, education, health and population planning. Neglect of the last three items has resulted in a continued low literacy rate, low life expectancy and high population growth.

2.4 The sixth plan proposals

The Sixth Plan (1983-88) envisages significant improvement in basic amenities. Education and health have been given high priority. It is envisaged that GDP will grow at 6.5 per cent per year, with the manufacturing sector taking the lead. Agriculture and other sectors are also expected to grow at a slightly higher pace compared with what had been achieved in the Fifth Plan (see Table 7). The private sector is to make to play a more important role in this development plan, and the deprived regions are to receive special attention.

The agricultural sector is to make its main thrust in export-oriented agriculture through improved use of modern inputs, management of water supplies, provision of extension services and training, use of mechanization and a price support system. The industrial sector's main effort is to be in basic metals, steel and engineering industries, agro-based industries and textiles, while maintaining the dominant role of the private sector (75 per cent of investment), increasing foreign investment and adopting a policy of import substitution and export orientation.

The energy sector, with 38 per cent of total public sector development outlay, receives the highest priority in the Sixth Plan. Major development of power is to be achieved through an institutional strengthening of public sector agencies, improvement of pricing policies, and mobilization of external capital on commercial terms. Another important element of the energy sector is the emphasis on renewable energy resources. This involves an Energy Plantation Project, which is expected to produce 5 to 6 million tons of firewood by 1992/93 from an area of 60 to 80 thousand hectares, whose implementation requires emphasis on training of foresters and extension workers.

As regards the transport sector, the government is attempting to change the emphasis from the railways to the national highway system. Rehabilitation and maintenance, management and operational techniques are to be improved during this plan period. Private sector investment in the transport sector will be one-quarter of the total investment in highways.

In respect of education and manpower, the plan recognizes the state of underdevelopment, as mentioned earlier. During the Fifth Plan the enrolment ratio in primary declined, along with the share of government expenditure on education in the GNP. Available manpower is

Table 8: Selected education indicators, 1983-88

Indicator	1983	1988
	(Percentages)	
Primary School Participation Rate	48	75
Urban	72	95
Rural	40	70
Boys	63	90
Girls	32	60
Rural girls	20	50
Secondary School Participation Rates		
Classes VI-VIII	26	33
Urban	52	59
Rural	15	22
Male	35	44
Female	14	19
Classes IX-X	15	20
Urban	39	45
Rural	6	10
Male	21	26
Female	8	12
Literacy Rates	24	48
Urban	44	62
Rural	15	42
Boys	32	49
Girls	14	47
Rural girls	6	40
	(Numbers)	
School facilities		
Primary schools	74 000	115 000
Second middle schools	6 400	10 209
Secondary high schools	4 200	5 500
Engineering universities and colleges	5	7
Polytechnics, monotechnics	34	63
Degree colleges	270	270

Source: Sixth Plan

mostly unskilled and rural-based. To provide the manpower required for implementation of the Sixth Plan, the targets shown in Table 8 are to be achieved by 1988.

It can be observed from Table 8 that emphasis is on primary education, secondary education and higher education in that order. Special attention has been given to education in rural areas, schooling for girls, and to doubling the literacy rate in the five-year period. In higher education, the engineering and technical branches have been emphasized. The targets set make it necessary to provide 5.3 million additional places in primary schools, 1 million in secondary, and to bring literacy to 15 million people. The mosque schools are to be utilized for primary teaching; in secondary education there is to be more emphasis on science and mathematics, with a broad-based and flexible curriculum biased towards employable skills. At the higher education level qualitative improvement is aimed at, with restricted expansion in quantitative terms.

2.5 The issue of employment

We have previously indicated the extent of the unemployment problem, which is not as serious as in some other countries around the world. On the other hand, there is an acute shortage of trained and qualified teachers at all levels. There is also the problem of matching training with skills needed for the economy. The Ministries of Education have little knowledge of the needs of the labour market, and the training offered is often irrelevant. This is more evident at the higher level of education and manpower. It is not so much a problem of shortage of high-level manpower, but of their quality and utilization. There is also the question of distribution of highly educated people, professionals being reluctant to work in rural areas and less developed regions like Baluchistan and NWFP. These are some of the issues that led us to launch this research. Before dealing with the matching of higher education with employment, we discuss in the next chapter the problem of employment in Pakistan.

2.6 Concluding remarks

With one of the highest rates of population growth (3.1 per cent year), the development that Pakistan has achieved since Independence in 1947 has contributed to a very slow rate of improvement in the quality of life. Although Pakistan has transformed itself from a net importer of food to an exporter, largely due to the 'green' revolution, and from an agricultural economy to a newly industrializing country (with 27 per cent of the GDP being contributed by the industrial sector), the country's literacy rate was a meagre 26 per cent at the beginning of the eighties.

The country's GNP per capita increased from Rs. 580 in 1973 to Rs. 791 in 1983 at constant 1989/60 prices. The economic development of the country has been based on five-year development plans (except for the period 1970-78), the most recent of which (the Sixth Plan 1983-88) envisages an ambitious growth rate of the GDP at 6.5 per cent per year, of which the manufacturing sector has the highest target rate of 9.3 per cent per year. The literacy rate is envisaged to increase to 48 per cent, of which the rate for girls from rural areas should increase from 6 per cent in 1983 to 40 per cent in 1988. The regional imbalances in economic and social development are to be reduced through a regional approach to the development strategy.

During the last decade Pakistan's unemployment rate has increased by 40 per cent in spite of the fact that many workers emigrated to the Gulf States. The labour force participation rate remained very low at 30 per cent in 1983; for the female population it was only 6 per cent. If the country is to achieve the growth targets of the present Sixth Plan, mobilization of human resources has to be given high priority.

3. Education and unemployment in Pakistan

Educated unemployment has been the subject of some concern in the recent past for a number of developing countries where impressive increases in the educational level of the population have been accompanied by high rates of open unemployment of educated manpower, particularly in urban areas. The situation has been severe in the case of the Philippines, Sri Lanka and Malaysia.² The problem in these countries is generally viewed as that of a mismatch between the job aspirations generated by the educational system and the job opportunities provided by the labour market.

In the case of Pakistan there have been very few attempts to quantify the extent of educated unemployment in the country.³ The objective of this chapter is to update previous estimates of unemployment rates by educational levels and to assess the direction of change over time. First, we look at the problem in the broader context of the overall employment situation in the country. This is followed by an analysis of changes over time in the employment prospects for the educated and the problems of estimation of unemployment. Also available information on the magnitude and occupational breakdown of migration to Middle Eastern countries is presented with its possible implications for the unemployment situation in the country. The final

² Turnham [17]. Rates of unemployment in the late sixties for Philippines, Malaysia and Sri Lanka were 11.6, 9.3 and 15 per cent respectively.

³ Rado [15]; Passha et al [14]; Anwar [2].

section compares the results of the present study with estimates derived from earlier work on the subject.

3.1 Overall employment situation

The general perception about developing countries is that the past two decades of planned development have, instead of alleviating the problem of underutilization of labour resources, led to a further worsening of the situation. High population growth rates, low levels of capital accumulation and greater prevalence of capital intensive techniques are some of the more frequently mentioned reasons for the failure of labour absorption to keep pace with growth rates of output.⁴ However the view of a deterioration in the unemployment situation has seldom been based on any sound empirical foundations. The lack of systematic evidence on trends is not surprising given the conceptual and measurement problems involved in estimating unemployment in the socio-economic milieu of the developing countries. According to the conventional approach, a person is classified as unemployed if that person has not worked at all during the reference week period and was actually seeking work or was available for work at the going wage rate. Unemployment rates for developing countries based on this approach tend to be on the low side since underutilization of labour in these cases is seldom manifested in the form of open unemployment but rather in the form of underemployment.⁵ The people of developing countries are too poor to afford the luxury of unemployment and are compelled to accept any source of employment which is available. As a result part-time employment in low productivity activities is widespread while open unemployment is much less prevalent.

However, although unemployment rates are limited value as a measure of the absolute level of underutilization of labour, they, along with other evidence such as changes in the sectoral distribution of employment, can still provide some rough indication of the direction of changes in the labour market.

⁴ Turnham [17].

⁵ Bruton [6].

Table 9: Sectoral distribution of employed labour force

	1951	1961	1971/72	1974/75	1978/79	1982/83
1. Agriculture	65.4	59.6	57.32	54.8	52.65	52.73
2. Mining and Quarrying	0.1	0.2	0.45	0.15	0.14	0.10
3. Manufacturing	9.7	13.5	12.47	13.63	14.52	13.44
4. Construction		2.1	3.41	4.20	4.92	4.80
	1.8					
5. Electricity & gas		0.2	0.37	0.49	0.74	1.13
6. Transport, etc.	1.7	2.7	4.84	4.87	4.73	4.59
7. Wholesale/Retail, Restaurants & Hotels		-	9.89	11.09	11.08	11.94
8. Financing, Insurance, Real Estate & Business Services	18.1	19.6	0.86	0.67	0.86	0.82
9. Community, Social and Personal Services		-	11.00	7.27	9.78	10.10
10. Activities not adequately defined	0.7	0.7	3.12	0.33	0.27	0.27

Source: For 1951 and 1961, G.M.Farooq [7]; for remaining years *Labour Force Survey*, Various issues

Information on various aspects of employment and unemployment in Pakistan is provided by the Labour Force Surveys (LFS) which have been undertaken by the Central Statistical Office since 1963/64.

Although based on nationally representative samples and on standard questionnaires, they have been conducted at irregular intervals thereby considerably limiting their usefulness for time series comparison. For instance, in the seventies the surveys were published only for the years 1970/71, 1971/72, 1974/75 and 1978/79. The LFS utilizes different concepts for measuring employment and unemployment as compared to those used in the census, which limits comparability of these two sets of data. Nevertheless these surveys are the main source of national level data on employment/unemployment cross-classified by age, education, occupation etc. Estimates presented in this study are based almost entirely on data provided in these surveys.

(a) Sectoral Distribution of Labour Force

As can be seen from Table 9, the trend in sectoral employment follows the expected pattern of a declining share of labour force in agriculture accompanied by an increase in industrial employment. Whereas this tendency was very visible in the decade from 1951-1961, it was much less marked in the subsequent period 1961-1971. The shift of labour from agriculture decelerated noticeably while the share of labour force in manufacturing fell by one percentage point. The low labour absorption of large scale industry in what is widely regarded as a period of rapid growth has been blamed on distortions in factor prices which encouraged the use of capital intensive techniques.⁶ Thus during the sixties the burden of labour absorption was borne by agriculture. Another area which served an absorptive function during the period was the wholesale and retail trade sector, whose share in total employment increased from 7.4 per cent in 1960/61 to nearly 10 per cent in 1970/71. This sector is generally considered a major source of urban underemployment providing marginal employment to those who cannot get jobs in the more high productivity secondary sector.⁷

Evidence on the occupational distribution of the labour force does not support the impression of a qualitative deterioration in the employment pattern during the seventies. As can be seen from Table 10, the period was marked by an increasing share of white collar workers and

⁶ Soligio and Stern [16]; Winston [18].

⁷ Bairoch [3].

of production workers. There was also a reduction in the proportion of the sales worker category from 12 per cent in 1971/72 to 10 per cent in 1978/79.

Table 10: Occupational distribution of employed labour force

	1951	1961	1971/72	1974/75	1978/79	1982/83
1. Professional, Technical and Managerial workers	1.08	1.81	2.09	3.01	3.05	3.08
2. Administrative and Managerial workers	0.56	0.78	0.51	0.71	0.73	0.86
3. Clerical and Related workers	12.65	3.01	2.30	2.69	2.92	2.99
4. Sales workers	5.53	6.15	12.05	9.98	10.11	10.23
5. Service workers	5.46	5.69	3.71	4.48	4.61	4.80
6. Agricultural, Animal Husbandry and Forestry workers, Fishermen and Hunters	65.3	59.7	57.22	54.7	52.64	52.82
7. Production and Related workers	18.62	21.04	22.12	24.3	25.94	25.23
8. Workers not classified	.01	1.82	-	.12	-	-

Source: For 1951 and 1961, G.M. Farooq [7]; for remaining years *Labour Force Survey*, various issues.

Apart from Labour Force Surveys, employment exchange data provide another source of information on unemployment at the national level. In 1982, there were 35 employment exchanges in the country with 21 in the Punjab, 5 in Sind, 7 in North West Frontier Province (NWFP), 1 in Baluchistan, and 1 in Islamabad.

For the purposes of assessing changes in unemployment over time, employment exchange statistics are of little use. From Table 11 it appears that the number registered do not even move in the direction of changes in the level of employment. Thus the increase in the unemployment rate was not even reflected in employment exchange data which showed that the absolute number registered declined from 299,588 in 1975 to 232,198 in 1979. While in 1975 the total number registered in employment exchanges was nearly 84 per cent of the number unemployed according to the LFS data, by 1979 the ratio of registered job-seekers in employment exchanges to total number unemployed derived from LFS data was only 27%.⁸ Although the incentive to register in employment exchanges is generally low since employers fill most vacancies through 'informal' recruitments or through advertisements, nevertheless there is no reason for this factor to vary so markedly over such a short span of four years. A more probable explanation for this sharply falling trend in registration may be the setting up of parallel organizations, such as the Overseas Employment Corporation and Bureau of Emigration, which offer the more attractive prospects of employment abroad, specially to the Middle East.

(b) Unemployment

According to the definition used in the Labour Force Surveys, unemployed persons included those without work who were seeking employment at the going wage in the reference week as well as those who were temporarily laid off. The rates of open unemployment derived on the basis of this definition are, as expected, unrealistically low. However, although on the low side they reveal a clearly increasing trend in the seventies. The proportion of openly unemployed in the labour force increased from 1.7 per cent in 1974/75 to 3.6 per cent in 1978/79 and nearly 4 per cent in 1982/83 (Table 12). According to the 1982/83

⁸ Total unemployment estimated on the basis of LFS data was 355,000 in 1974/75 [14]; in 1978/79 the figure was 860,000.

Table 11: Number of job-seekers registered at employment exchanges (1975-1979)

Literacy status and Educational Level	1975	1976	1977	1978	1979
1. Illiterate	72 884	63 000	51 605	56 095	56 959
2. Literate	226 704	196 791	145 358	183 408	175 239
a. Below Matric	89 909	82 143	65 293	72 614	73 286
b. Matric but less than degree (excluding polytechnic diploma-holders)	124 429	103 221	72 425	100 506	93 720
c. Polytechnic diploma-holders	1 795	1 998	1 560	2 025	2 058
i. Electrical	363	476	527	535	489
ii. Mechanical	351	415	356	528	448
iii. Civil	801	723	444	465	661
iv. Others	280	384	233	497	460
d. Graduate Engineers	277	294	349	322	65
i. Electrical	98	123	86	19	37
ii. Mechanical	91	71	81	187	13
iii. Civil	83	92	103	32	8
iv. Others	5	8	79	84	7
e. Post-graduate Engineers	-	31	-	-	-
f. Other graduates	8 967	8 194	5 179	7 281	5 648
g. Other post-graduates	1327	910	552	659	461
Total	299 588	259 791	196 963	239 503	232 198

Source: Provincial Directorates of Labour.

Economic Survey, this increasing trend is attributable to two factors: "First, rural-urban migration makes open prevailing disguised employment; Second, high school and college graduates are increasingly added to the educated unemployed as educational facilities expand faster than employment opportunities. There are indications that the incidence of open unemployment falls more heavily under this latter category and is likely to accentuate further".⁹

3.2 Educated unemployment

Unemployment rates for Pakistan by level of education based on LFS data have been estimated by Rado¹⁰ for 1971/72 and by Pasha et al¹¹ for 1974/75. These estimates along with those for the later years derived in this study are given in Table 12.

The results generally show that the educated tend to have higher unemployment rates as compared to the illiterates. This is in keeping with findings for other less developed countries where rates of unemployment are lower for the illiterate groups as compared to their more educated counterparts. The higher rate of unemployment amongst the educated is attributed to the fact that the educated, from better-off families, can afford to wait for the right job in the high wage modern sector rather than accept low productivity employment.¹²

The findings also reveal a changing pattern of unemployment by education over time. Thus in 1971/72 chances of unemployment varied positively with the level of education. The unemployment rate for university graduates at 5.8 per cent was more than twice the corresponding rate of 2.8 per cent for primary and secondary school-leavers. However, by the latter half of the seventies, the relationship between the two variables took the form of an inverted U-shaped curve (see also Table 13). This pattern is characterized by low unemployment rates at

⁹ Government of Pakistan, Ministry of Finance [12], p.173.

¹⁰ Rado [15].

¹¹ Pasha et. al. [14].

¹² Turnham [17].

Table 12: Unemployment rates by level of education, in percentages

	Total	No education	Incomplete primary	Primary but less than matric	Matric but less than degree	Degree but less than post-graduate	Post- graduate
1971/72	2.0	1.7	2.8	2.8	4.2	5.8(a)	
1974/75	1.74	1.13	1.07	3.01	5.74	4.08(a)	1.61(b)
1978/79	3.6	3.0	4.8	4.5	5.7	2.7	3.6
1982/83	4.9	3.4	6.2	4.5	5.5	3.0	3.0

(a) Degree (General Education)

(b) Degree Post-graduate Diploma other than general education.

Source: For 1971/72 Rado [15]; for 1974/75 Pasha et. al [14]; for 1978/79 and 1982/83 *Labour Force Survey*

both ends of the educational spectrum, i.e. for the sub-group with no education and those with a graduate or post-graduate degree. The inverted 'U' relationship is the more commonly observed one and has been noted for a number of developing countries including Argentina, India, Malaysia and Syria.¹³

A comparison of the educational composition of the unemployed, based on LFS data and that derived from employment exchange statistics, points to differences in the registration behaviour of different educational groups. Thus in 1975 the proportion of unemployed who were uneducated comprised 46.7 per cent of total unemployed according to LFS data and only 24 per cent on the basis of employment exchange statistics (Table 14). On the other hand, persons who had completed their matriculation but had not graduated were 42 per cent of the total job-seekers registered with the employment exchange as compared to the much smaller corresponding proportion of 21.8 per cent in the case of LFS data. Differences in the educational composition of the unemployed derived from the two data sets were further accentuated in the later year, 1979. Under-representation of the uneducated in employment exchange statistics is to be expected as they are less likely to know of or have access to employment exchanges, especially in rural areas. On the other hand, a considerable proportion of educated groups who register may not be unemployed but merely aspiring to a better job. As a result the numbers of educated unemployed in Employment Exchange data would tend to be biased upwards.

One could also observe the change in the proportion of unemployment by educational level over time and among different provinces. The situation in NWFP and Baluchistan has worsened over time, whereas that of Sind and Punjab has remained more or less the same, according to LFS data (see Table 15).

While unemployment rates have registered an increase for all educational groups, there is a noticeable fall in the rate of unemployment of the most highly educated class. A possible explanation for this declining trend could be large-scale migration of skilled manpower to the Middle East from the mid-seventies onward. It has been estimated that in 1981 there were between 1.4 to 2 million Pakistanis working abroad.¹⁴

¹³ Blaug [4].

Table 13: Distribution of Labour Force by level of Education 1982/83, in millions

	Total	No education	Incomplete primary	Primary but less than matric	Matric but less than degree	Degree but less than post- graduate	Post- graduate	Others
1. Population aged 10 years and above	60.57 (100.0)	39.79 (65.7)	3.16 (5.2)	12.21 (20.2)	4.45 (7.3)	.62 (1.0)	.22 (.4)	.13 (.2)
2. Labour force	26.90 (100.0)	17.63 (60.0)	.871 (2.9)	5.31 (17.8)	2.45 (8.2)	.40 (1.3)	.17 (0.6)	.07 (0.2)
a. Employed	25.85 (100.0)	17.03 (65.9)	.82 (3.16)	5.07 (19.62)	2.31 (8.95)	.39 (1.5)	.16 (.63)	.07 (.26)
b. Unemployed	1.05 (100.0)	.60 (57.24)	.054 (5.12)	.238 (22.75)	.135 (12.88)	.012 (1.19)	.005 (.47)	.004 (.36)
3. Not in labour force	33.67	22.16	2.289	6.90	2.0	.218	.052	.059
4. Unemployment rate 26 ÷ 2 (in percentages)	3.9	3.4	6.2	4.5	5.5	3.0	3.0	

Source: Labour Force Survey (1982-83)

Note: Absolute numbers are derived on the basis of population estimate for Pakistan as of January 1983.

Table 14: Percentage distribution of unemployed by educational level: comparison of labour force survey (LFS) and employment exchange data (EE)

Literacy status and educational level	1975		1979	
	LFS(a)	EE	LFS(b)	EE
Illiterate	46.7	24.0	58.43	24.5
Below matric	26.93	30.0	27.38	31.6
Matric but less than degree	21.79	42.0	12.58	40.3
Polytechnic diploma-holders	-	0.5	-	0.8
Graduates	3.9	3.1	0.9	2.0
Post-graduates	0.6	0.4	0.6	0.2

(a) LFS figures refer to the year 1974/75

(b) LFS figures refer to the year 1978/79

Source: Provincial Directorates of Labour, *Labour Force Survey*, 1974/75 and 1978/79.

Although detailed data on the educational status of the migrants are lacking, information on their skill composition is available from two sources, the Bureau of Emigration and the International Migration Project (PIPO/PIDE). The Bureau of Emigration provides information on migrants to all countries who have migrated through official chan-

¹⁴ ARTEP [1].

Table 15: Province-wise unemployment rates by level of Education

	Total	No education	Incomplete primary	Primary but less than metric	Matric but less than degree	Degree but less than post- graduate	Post- graduate	Others
1974/75								
Sind	0.8	0.6	0.6	1.5	1.8	.8	1.1	-
Punjab	1.7	1.3	1.0	3.2	8.0	2.2	1.9	-
Baluchistan	0.2	0.2	0.3	-	-	-	-	-
NWFP	2.0	1.0	1.2	5.9	9.4	2.6	1.7	-
1978/79								
Sind	1.9	1.5	2.9	2.6	3.5	1.5	1.7	-
Punjab	4.5	3.9	5.7	5.5	6.7	4.2	6.5	-
Baluchistan	1.6	1.05	-	7.8	1.2	-	-	-
NWFP	3.6	2.9	5.9	3.5	9.3	3.3	4.3	-
1982/83								
Sind	1.8	.2	1.4	1.7	2.9	1.7	2.5	-
Punjab	4.3	3.5	8.1	5.4	6.2	6.0	3.3	-
Baluchistan	4.8	4.2	-	2.8	1.0	2.0	1.7	-
NWFP	8.0	8.0	10.0	12.0	-	4.0	-	-

Source: Labour Force Survey, 1974-75, 1978-79 and 1982-83

Note: Province-wise population estimates are based on proportions derived from the 1981 Population Census.

nels while the latter project pertains only to migrants to the Middle East and is based on a survey of 12,500 departing passengers from the three main airports of the country. The occupational breakdown of migrants taken from these two sources is presented in Table 16.

Table 16: Distribution of migrant workers by occupational categories

	Bureau of emigration 1971-77				PIDE/PIPO (1979)	
	All countries		Middle East		No.	%
	No.	%	No.	%		
1. Professional & Managerial workers	7 528	4.1	3 773	2.4	540	4.3
2. Clerical workers	5 372	3.0	4 422	2.8	190	1.5
3. Production workers	123 796	68.1	112 181	71.5	10 395	83.2
a. Skilled	63 921	35.2	57 735	36.7	5 075	40.6
b. Unskilled	59 869	32.9	54 746	34.8	5 320	42.6
4. Service workers	4 586	2.5	2 852	1.8	274	2.2
5. Sales workers/Business	-	-	-	-	744	6.0
6. Miscellaneous	40 447	22.3	33 938	20.5	356	2.8
Total	181 729	100.0	157 466	100.0	12 499	100.0

Source: ARTEP [1]

The bulk of the migrants to the Middle East consist of production workers, 71.5 per cent according to the Bureau's estimate and 83.2 per cent according to the PIPO study, whereas only 4.3 per cent of the migrants are classified as professional and managerial workers. Here it should be pointed out that graduates and post-graduates, the educational group whose unemployment rate has been falling over the seventies, belong mainly to the latter occupational category. According to the 1982/83 Economic Survey, of the total employed degree-holders nearly 40 per cent were classified as professional and managerial workers while the proportion of post-graduates employed in this category was 61 per cent of the total. Furthermore, from the point of view of explaining the fall in unemployment rates over the mid-seventies, it is the emigration to the Middle East, which escalated dramatically during the period, that is of special interest.

Data on migrants as a percentage of the domestic labour force by broad occupational categories is provided in Table 17. The data show that the professional and managerial workers who migrated to the Middle East comprised 4.6 per cent of those employed domestically in that group while the corresponding figure for migrants in this group to all countries was nearly 6 per cent.

A more detailed breakdown of occupational classification of migrants as a proportion of corresponding groups who remain in domestic employment is presented in Table 18. This further classification points to considerable variation in the incidence of migration within the broad occupational categories. Of particular relevance to the findings of this chapter is that within the group of professional and managerial workers, doctors, engineers, nurses and accountants are in the greatest demand abroad and they therefore constitute a very large proportion (more than double in the case of nurses) of those domestically employed in these professions. It is therefore possible that the higher incidence of outwards migration in these particular groups may be an explanation for the decline in unemployment amongst the very educated noted earlier.

Table 17: Migrants as percentages of all Pakistan workers in major categories of employment 1979

	Pakistan Labour Force		Bureau Data Estimates (All countries)		PIPO/PIDE Estimate (Middle East)			
	Numbers (millions)	Percentage	Numbers (millions)	Percentage	Numbers (millions)	Percentage		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(4) ÷ (2)	(6) ÷ (2)
Total workers	23.682	100	1.790	100	1.246	100	7.56	5.26
Professional, technical and managerial workers	1.178	4.97	0.07	4.1	0.054	4.32	5.94	4.58
Clerical workers	1.058	4.47	0.05	3.0	0.019	1.52	4.73	1.80
Production workers	17.302	73.1	1.22	68.1	1.036	83.16	7.05	5.99
Sales workers/businessmen	2.091	8.82	-	-	0.074	5.95	-	3.54
Service workers	1.859	7.85	0.05	2.5	0.027	2.19	2.69	1.45
Miscellaneous(a)	0.194	0.82	0.399	22.0	0.036	2.86	-	-

(a) Including agricultural workers

Source: ARTEP, [1]

Table 18: Migrants as percentages of estimated domestic employment for 24 major occupations

Estimates 1977/78	Manpower Division (All countries)	Bureau Data (Middle East)	PIPO/PIDE
<i>Professional and Managerial workers</i>			
Engineers	39 470	31.92	84.29
Accountants & Auditors	12 295	43.92	55.74
Managers/Executives	155 978	2.31	-
Teachers	423 822	6.9	1.03
Doctors	13 172	54.7	17.1
Nurses	4 300	209.3	58.0
Computer Programmers/Operators	1 208	-	25.7
<i>Production workers</i>			
Masons	114 691	105.2	66.1
Carpenters	142 271	94.9	54.6
Electric fitters/Electricians	125 728	31.5	33.1
Plumbers and Pipe-fitters	29 058	62.0	56.6
Cable jointers/Electric linesmen	36 773	19.6	-
Mechanics	241 340	25.4	12.6
Drivers (motor vehicles)	249 590	-	39.1
Tailors	117 235	-	50.2
Machine Tool operators/setters	85 846	-	32.2
Blacksmiths	88 201	-	1.7
Watchmakers	5 735	-	15.2
Painters	119 230	18.1	16.4
Foremen/Supervisors	69 948	41.2	-

Source: ARTEP [1].

3.3 Comparison of results with other studies

The unemployment rates derived on the basis of Labour Force Survey data are much lower than previous estimates based mostly on surveys of graduates from particular institutions. For instance, the results cited from the study by A. Anwar reveals an unemployment rate as high as 47 per cent for university graduates from Punjab University in the years 1967/68 and 1968/69.¹⁵ Another study for matriculation and intermediate graduates of NWFP reveals an even higher rate of 64 per cent and 50 per cent respectively.¹⁶ Both the studies were based on mailed questionnaires with a very low response ratio. Furthermore classification into employed or unemployed categories was based on self-declaration. Thus the statistical methods used in these cases were not only unreliable but also likely to impart an upward bias to the results. As Anwar himself has pointed out, unemployed persons are more likely to respond to these questionnaires to draw attention to their problem. Secondly, self-classification would also include as unemployed persons who are currently employed but looking for more suitable employment.

The high unemployment rates derived in studies based on new entrants into the labour force may also reflect the greater difficulty of getting a first job due to lack of experience rather than reasons associated with educational characteristics as such. To be able to assess the true causes of educated unemployment, data on unemployment should ideally be cross-classified not only with education but also with age and duration of unemployment.

Some studies have also been conducted to assess the job prospects of graduates of technical institutes. These are of special interest since one of the most frequent explanations for the prevalence of educated unemployment is that the educational system in developing countries is not geared towards imparting specific skills. The solution according to this hypothesis lies in greater emphasis on the vocationalization of the educational system. Philip Foster has argued to the contrary, on the basis of evidence from Ghana, that a system of vocational education within the formal educational system is not likely to be an effective

¹⁵ Anwar [2].

¹⁶ Board of Economic Inquiry, NWFP [5].

solution.¹⁷ Evidence on job prospects of vocational school-leavers for Pakistan seem to support Foster's arguments and again indicates, contrary to prevailing opinions, that vocational education will lead to more unemployment. A survey of Lahore Polytechnic graduates done in 1970, based on personally administered questionnaires and a high response ratio, revealed that 44 per cent of the graduates had been out of a job for one year after graduation.¹⁸ Furthermore, most of the students interviewed reported difficulty in finding employment almost irrespective of their subject of study.

The National Manpower Council has also carried out a series of surveys of technical manpower which, although statistically not as reliable as the above mentioned study, point to the same conclusion.¹⁹ Due to the problems of using mailed questionnaires and consequent low response rates, the findings of these surveys can be considered as little more than suggestions. However, the overall picture seems to suggest that technical training institutes, polytechnics and other vocational institutions improve neither the employment nor the earning prospects of those who enroll in them.

3.4 Concluding remarks

Before summarizing the results it is necessary to once again caution the reader that, due to the problems involved in measuring unemployment, the estimates derived can at best provide rough guidelines to the direction of change and not measure absolute levels of unemployment. The findings of this chapter, in keeping with the evidence for other developing countries, point to considerable differences in unemployment rates by level of education, with relatively lower rates among the illiterate population.

Another trend which is suggested by the data was of falling rates of unemployment among the most highly educated group (graduates and post-graduates). To some extent this tendency seems to reflect the

¹⁷ Foster [8].

¹⁸ Lent [13].

¹⁹ Zar [19].

impact on the labour market of large scale migration of skilled manpower to the Middle East during the seventies.

As a result of this decline in the unemployment rate for the highly educated group, the relationship between educational level and unemployment rates has changed over the period under study. Whereas in the early seventies education and unemployment were negatively related, in the later period unemployment rates by educational level took the form of an inverted 'U' with the lowest rates for the highly educated and the uneducated group. The high unemployment rate for those with matriculation but less than a degree is cause for concern.

An analysis of survey data in Chapter 6 will attempt to provide further insight concerning the educated unemployed. However, Chapter 4 continues in the same vein as this chapter but focuses on the overall labour market and unemployment situation. Elasticity estimates are used to forecast the likely unemployment situation by the terminal year 1987/88 of the Sixth Plan period.

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4. Employment and manpower projections for the sixth plan period (1983-1988)

Manpower planning plays a crucial role in overall economic planning. It is also important for the betterment of living conditions and the elimination of mass deprivation. Participation in the production processes of society and the consequent dispersal of benefits results from the interaction of physical and human capital resources, the type of technology, and the institutional framework of a nation. Manpower planning, in this context, assists in striking a viable balance between the resources and aspirations of a nation. It provides not only a check on the feasibility of achieving production targets which depend on the availability of the requisite skill mix, but also assesses the relevance of these goals towards optimal utilization of human resources. In so doing, manpower planning leads to an integration of human resource planning with economic planning.

Notwithstanding its importance, manpower planning is yet to be fully integrated within the planning framework of Pakistan.²⁰ This failure to do so is partly due to the limited data-base and the lack of a comprehensive employment strategy. However, various Plans did provide manpower projections with varying degrees of detail, and research efforts have been made to achieve the same in the past.

In this chapter we attempt to make some preliminary estimates of manpower and employment projections for the Sixth Five-Year Plan (1983-88). First, there is a brief review of earlier efforts at such exer-

²⁰ For a discussion of this technique of educational planning see Bowman [1], pp. 38-44.

cises and some of their major limitations are discussed. Following that, manpower requirements for the Plan period are estimated and matched with the expected labour availability to determine the imbalances.²¹

4.1 Review of earlier efforts

The First Plan (1955-60) contained estimates of the labour force, employment and unemployment for the base year (1955).²² These estimates were based on the 1951 Census and Manpower Surveys. For the Plan period it was assumed that employment would increase sufficiently to absorb the incremental labour force. In contrast to its explicit objective 'to provide jobs to the new entrants in the labour force, to absorb the unemployed into jobs, and to find ways of making use of unemployed rural labour', the First Plan did not have a comprehensive approach for the assessment of manpower availability and requirements.²³

The Second Plan (1960-65), in general, provided rough estimates of the labour force for the Plan period but did not quantify future employment and unemployment. For a few selected categories of manpower, supply and demand were worked out and this revealed shortages.²⁴ Accordingly, the Plan suggested various specific measures, stressing more efficient mobilization and training of technical manpower, to deal with these shortages.²⁵

²¹ This chapter has been prepared by A.R. Kemal and M. Irfan. It is an updated version of their paper presented at the ARTEP/PIDE seminar on *Employment and structure change in Pakistan's economy*, Islamabad, 12-13 April 1983.

²² First Plan [8], p.593.

²³ *ibid.*, p 596.

²⁴ Second Plan [9], pp.370-371.

²⁵ *ibid.*

The Third Plan (1965-70) detailed labour force projections and provided a sectoral breakdown of the employed labour force. In addition, the requirements of the country in six broad groups of occupation and four categories of education were estimated.²⁶ These exercises were carried out by using data from other countries at a comparable stage of development. The projections implied a good deal of optimism: unemployment was to decrease from 20 per cent of the labour force to 15 per cent during the Plan period.²⁷ Moreover, the Plan figures for employment and unemployment were in mean years (rather than in numbers) and hence involved arbitrary conversion ratios between the Plan estimates and the available statistics.

The Fourth Plan (1970-75) provided estimates of labour force, employment, and unemployment both for the beginning and the terminal year of the Plan.²⁸ These estimates were based on a rigorous exercise carried out separately by Ruud²⁹ and Karwanski.³⁰ Using Sabolo's econometric model, based on a cross-country regression analysis of 40 developed and developing countries, Ruud estimated manpower requirements in terms of educational levels. The regression equations are provided in Table 19. There were two major weaknesses in this approach. Firstly, to the extent that structural transformation of Pakistan's economy does not conform to the average of these countries, the relevance of these projections is seriously impaired. Secondly, the sectoral productivity growth implied by these exercises was not plausible.

In addition to Ruud's projections, a few other exercises during the early seventies were carried out. The Investment Advisory Centre of

²⁶ Third Plan [10], pp.218-221.

²⁷ *ibid.*, p 219

²⁸ Fourth Plan [11], pp.112-113.

²⁹ Ruud [14].

³⁰ Karwanski [5].

³¹ Investment Advisory Centre of Pakistan [3].

Pakistan (IACP)³¹ and Irfan³² projected manpower availability and requirements for the period extending to 1985. IACP's labour requirement projections were based on assumptions such as a shrinking share of agriculture in GNP as well as in total employment. For the manufacturing sector, estimated cost per job was used to convert investment outlay into required labour. Employment growth in other sectors was based on the rate of urbanization and past employment growth. Irfan also utilized various assumptions. The employment elasticities observed during 1963-72 were used to determine labour requirements. The relevant regression equations are given in Table 20. The size of the available labour force was arrived at by using the average of five years (1968-72) of the labour force participation rate.

Wilson's labour force and sectoral employment projections formed the basis of the Fifth Plan³³. These were based on past productivity growth rates and Plan targets. In addition, the Manpower Division prepared estimates of the availability of and requirement for 105 occupations for the Plan period. The data for this exercise were mostly based on Annual Establishment Enquiries and on a few special surveys. These projections on the supply side ignored drop-outs from school and used the desirable level of education of a given occupation on the demand side. Under the auspices of a PAK/Netherlands project, an exercise aimed at working out the occupational and educational manpower requirement was conducted which improved upon the earlier manpower estimates.

For the Sixth Plan period, two exercises have been conducted so far. The Asian Regional Team for Employment Promotion (ARTEP) worked out the requirement estimates on the basis of past employment elasticities while the labour supply was arrived at by age specific labour force participation rate of 1979/80. Cohen³⁴ has used an employment elasticity assumed to decline at the rate of 11 per cent on the demand side. For labour supply, the Plan objectives of increasing school enrolment ratios are incorporated.

³² Irfan [4].

³³ Fifth Plan [12], pp.16-17.

³⁴ Cohen [2].

Table 19: Sabolo's model of employment projections

Sector	Functions	R ²
Log 100E ₁ /N =	1.783 - 0.106 (Log Y/N) ²	.712
Log 100E ₂₋₃ /N =	-0.014 + 0.105 (Log Y/N) ²	.825
Log 100E ₄ /N =	-6.045 + 4.206 (Log Y/N) - 0.676 (Log Y/N) ²	.826
Log 100E ₅ /N =	2.193 + 0.581 (Log Y/N)	.810
Log 100E ₆ /N =	0.046 + 0.072 (Log Y/N) ²	.827
Log 100E ₇ /N =	1.124 + 0.487 (Log Y/N)	.800
Log 100E ₈ /N =	0.142 + 0.344 (Log Y/N)	.800

Source: Irfan [4]

Note:- N = population, Y = GDP in 1960 US dollars. E₁ = employment in agriculture, fishing; E₂₋₃ = employment in manufacturing (here including also mining). E₄ = Employment in construction, E₅ = Employment in gas, water and electricity services, E&s.6. = Employment in commerce, E₇ = Employment on transport and communication and E₈ = Employment in services.

The results of the various studies, except the last two, are presented in Table 21.³⁵ Estimates of both availability and requirements vary over a wide range. There is a difference of 3 millions in the labour supply. It must be noted that both the supply estimates were based on identical

³⁵ The results of these two are discussed in detail and compared with the results of our exercise.

Table 20: Employment and GVA 1963-72 in Double Log

$$(\text{Log } L_i = b_0 + b_1 \text{ Log } v_i)$$

Sector	b_0	b_1	R^2	F	d	t
Agriculture	4.362	0.530(a)	.85	63.1	1.22	7.94
Manufacturing	3.285	0.558(a)	.86	67.20	1.09	8.20
Construction	-3.683	1.429(a)	.74	33.07	1.28	5.75
Electricity & gas	2.075	0.330(a)	.18	3.48	1.70	1.87
Commerce and trade	-1.890	1.114(a)	.92	127.99	1.73	11.31
Transport and communication	-5.454	1.638(a)	.91	115.71	1.48	10.76

Source: Irfan [4]

L = Labour employed in (000)

V = Value added in Millions (1959-60 prices).

(a) = Significance at 5 per cent level

population estimates. If one includes alternative population estimates, widely diverging results will occur. On the requirement side, the studies using international experience (Ruud, for instance) tend to seriously over-estimate the productivity gain. The studies by IACP AND Irfan take account of Pakistan's experience and hence suggest a slow rate of structural transformation of the economy and therefore of the resultant manpower structure. Corresponding with the supply estimates, the unemployment estimates exhibit a tremendous variation. According to these projections, unemployment as a percentage of the labour force can be anywhere between 0.4 per cent to 42 per cent in 1985.

Table 21: Alternative labour force: requirements and availability projections 1970-85, in thousands

	<u>1970</u>	<u>1975</u>	<u>1980</u>	<u>1985</u>
Labour force availability (a) based on:				
(i) C.S.O. activity estimate	20 619	23 510	26 991	30 985
(ii) Karwanski's estimate	17 616	20 283	23 445	27 073
Requirement based on:				
(A) I.L.O. model (Ruud)				
(i) Lowest	14 609	16 065	17 012	17 811
(ii) Highest	16 149	16 675	21 852	25 973
(B) P.I.D.E. (Irfan)	20 211	22 482	25 402	28 943
(C) I.A.C.P. estimates	-	-	24 635	27 633
Unemployment				
(i) Lowest	408	1 028	1 589	2 044
(ii) Highest	6 010	6 455	9 879	13 176

(a) Based on labour force participation of an average of five years (1968-72).

Source: Irfan [4].

The responsiveness of the results to definitions, estimation procedure and underlying assumptions necessitated by a limited data-base are among some of the major reasons for the imprecision of the estimates.

Ideally, the labour requirements can be determined if the future investment outlay along with the mix of projects and nature of technology is known. In order to have a fair idea about the forthcoming labour supply, knowledge regarding labour market participation is essential. The nature of statistics currently available hardly provides this. As an alternative, therefore, researchers often opt to work with employment elasticity.

In the context of manpower projections in a developing country like Pakistan, many problems are encountered in using the elasticity measure. Estimation of both the denominator and numerator of an elasticity measure carries a considerable margin of error and uncertainty. Estimates of GDP and its sectoral composition are also not error free. Sectoral output estimation itself involves arbitrariness. Consistency of mark up in trade, unchanging ratio of cement to value added in construction, and exogenously assumed growth rate of services, represent a few of the assumptions used in the estimates of sectoral value added and output.

More complex problems arise from the measurement of employment and the labour force. The identification as well as reliable measurement of the active population, essentially a mapping of human behaviour into a set of well-defined categories, is quite problematic. Conceptual ambiguities and an inadequate data-base preclude a reliable estimate of the size and composition of the labour force and its changes over time. Limitations of the concept used in measuring labour supply have been widely discussed and are well known.³⁶ In addition, the approach currently in vogue depends on some norm for categorization of the labour force into the employed and unemployed. A desire to obtain a job, demonstrated through job search, qualifies a person without work to be enumerated in the economically active population and defined as unemployed. The concept of unemployment not only loses touch with reality, but is also deficient as an indicator of labour supply, unless supplemented with information on income and duration of work needed by jobless people. Such refinements are hard to come by.

Labour force participation according to the latest available Labour Force Survey (1981/83) is 30.19 per cent, down slightly from the 31.02

³⁶ See for example Standing [15].

per cent reported for the 1978/79 survey.³⁷ Data collected through various Labour Force Surveys and censuses yield hardly any consistent trend over time. Given the atomized nature of production, supportive values of the social system, massive prevalence of self-employment and inadequate concepts, reported unemployment has been very low. The observed or reported employment and its variation over time therefore reflects both demand forces as well as a supply thrust. In these circumstances the use of past employment elasticity for future projections may prove hazardous since it mirrors variation in the output growth rather than the underlying technological choices. Checks on projections resulting from productivity changes (and its inter-sectoral relationship) and manpower structure changes, along with the judicious use of past elasticity indices, may make it possible to provide a scenario rather than a definite pattern of manpower use. The chapter attempts to create one for the Sixth Plan period.

In the following section an attempt has been made to estimate labour requirements during the plan period. In addition to making a comparison with other studies, implications of the projections for inter-sectoral productivity relationships over time are also discussed. Furthermore, the feasibility of the projected job creation with the planned investment outlay is checked by observed cost per job during the past few years. Labour availability projections are also presented. Sensitivity of these estimates to the return flow of emigrants is demonstrated. Finally, a sketch of possible imbalances is provided.

4.2 Manpower forecasting for the sixth plan

4.2.1 Labour Requirements

As discussed in the previous section, labour requirements projected through uncritical use of past employment elasticities are subject to a number of errors and uncertainties. The type and nature of inconsistencies yielded by simple extrapolation of the past into the future can be assessed by a closer look at Table 22 where the employment elasticities pertaining to different time periods are presented. These elasticity measures exhibit wide fluctuation across the sub-periods. A manpower

³⁷ Labour Force Survey 1982/83 [7], p.XVI.

forecast based on a specific sub-period would hardly prove a reliable guide for the Sixth Plan period. Requirements based on the latest sub-period (1974/75 to 1978/79) would suggest that Pakistan will end up importing labour in 1987/88 rather than exporting. By working out the marginal rate of decline yielded by various sub-periods, Cohen used elasticities of 0.44 and 0.32 for the wage and non-wage employment respectively for the Sixth Plan period. Not only does this figure vary with the choice of the base year, but the distinction between wage and non-wage employment fails to correspond with the realism of the labour market situation in Pakistan. Wage employment, contrary to his contention, is not always a by-product of demand forces alone, while self-employment is hardly a euphemism for underemployment and unemployment. Both in terms of time and wage/income criteria, the latter is unlikely to be behind the former.

In order to incorporate the ambitious growth objectives of the Sixth Plan, the elasticity measures used in this manpower projection pertain to high growth sub-periods. For agriculture and electricity, labour requirements are worked out on the basis of the elasticities observed during 1961-1969/70. In the case of the manufacturing and services sectors, the 1961-1974/75 sub-period serves as a base. For sectors like construction, financial institutions and transport, the sub-period 1969-74/75, 1964-1978/79 and 1974-75 to 1978-79 are used respectively. For trade, we assumed an elasticity which is two-thirds of the one yielded by 1961-1969/70. Since the employment elasticity of this sector has been very high in the past, and further labour absorption is less likely (partly due to compositional change) we assume a lower absorptive capacity. As both the commodity-producing and tertiary sectors experienced a significant growth during the Fifth Plan period, the same elasticities are applied to work out the bench mark data for the Sixth Plan. The selected employment elasticities and estimated employment in 1982/83 are provided in Table 23. A comparison between the estimates of this exercise with the other studies is presented in Table 24 and 25 for both the bench mark year as well as the terminal year of the Sixth Plan.

The employment estimates or the sectoral composition for 1982-83 do not exhibit a wide difference in these studies either within themselves or with the actual figures. The Manpower Division arrives at benchmark data by simple extrapolation of employment in each sector at an annual growth rate of 3 per cent. The plausibility of a zero varia-

Table 22: Employment elasticities

	1961 to 1969/70	1961 to 1974/75	1961 to 1978/79	1969/70 to 1974/75	1969/70 to 1978/79	1974/75 to 1978/79
Agriculture	0.510	0.630	0.666	2.160	1.216	0.911
Mining and quarrying	0.340	-	-	-	-	-
Manufacturing	0.426	0.320	0.426	0.000	0.641	1.461
Electricity	0.227	0.253	0.341	0.883	1.255	1.592
Construction	1.099	0.745	0.972	0.684	0.879	1.083
Trade	0.934	0.952	0.973	1.022	1.053	1.091
Transport	1.253	1.136	0.889	0.762	0.524	0.408
Financial institutions	N.A.	0.205	0.238	-	0.153	3.538
Services	N.A.	0.205	0.238	0.854	0.839	0.863

tion in the employment structure can be questioned, even if for a short period like 1978-82. ARTEP on the other hand took the benchmark data from the Fifth Plan terminal year thereby assuming full achievement of targets. The lowest estimates are Cohen's due to unreasonably low values of the elasticity measures applied.

Cohen's estimates for the terminal year labour requirements shown in Table 25 are the lowest while ARTEP's are the highest. The difference stems mostly from the variation in the benchmarks because all the studies end up with 3 per cent annual growth rate in total employment.

Table 23: Projection of employment in 1987-88, in millions

	Employment in 1982-83(a)	Target growth of output	Elasticity of employ- ment	Growth rate of employ- ment	Employment in 1987-88
Agriculture	14.16	4.90	0.51	2.5	16.07
Mining and quarrying	.03	7.50	0.32	2.0	.03
Manufacturing	3.61	9.30	0.32	3.0	4.19
Electricity	.30	8.00	0.23	1.8	.33
Construction	1.29	9.00	0.68	6.2	1.76
Trade	3.21	7.90	.41	3.1	3.84
Transport	1.23	7.00	0.41	2.9	1.42
Financial institutions	.22	6.00	0.15	1.0	.23
Services	2.74	4.70	0.20	1.0	2.88
Unallocated	.07	-	-	-	0.07
Total	26.88				30.82

(a) For employment estimates of 1982-83, see the Labour Force Survey [7, p.96].

Table 24: Alternative manpower requirement projections for the bench-mark year (1982-83), in millions

	Actual(a)	Artep Study	Cohen's Study	Manpower Division
Agriculture	14.18	14.81	13.26	13.93
Mining & Quarrying	0.03	-	0.03	.04
Manufacturing	3.61	3.69	3.76	3.47
Electricity	.30	0.14	0.16	0.13
Construction	1.29	1.12	1.27	1.06
Trade	3.21	2.94	2.97	2.82
Transport	1.23	1.28	1.09	1.21
Financial Institutions	0.22	-	-	0.16
Services	2.74	2.76	2.81	2.48
Unallocated	.07	-	-	0.08
Total	26.88	26.74	25.35	25.41

(a) Actual figures are based on the 1982-83 Labour Force Survey [7, p.96], and they are the basis of future projections for this study

The implications for sectoral composition of employment do however vary. The share of agriculture in the total employment indicated by the ARTEP study is 53.9 per cent, while Cohen's and this study's yield 51.9 and 52.1 per cent respectively. According to the 1982/83 Labour Force

Table 25: Alternative manpower requirement projections for the terminal-year (1987-88), in millions

	Present Study	ARTEP		Cohen
		Low	High	
Agriculture	16.07	15.93	16.72	15.23
Mining & Quarrying	.03	-	-.03	
Manufacturing	4.19	4.23	4.52	4.25
Electricity	.33	0.16	0.17	.21
Constructiton	1.76	1.34	1.40	1.65
Trade	3.84	3.44	3.57	3.72
Transport	1.42	1.47	1.52	1.20
Financial Institutions	.23	3.04	3.12	3.13
Service	2.88	-	-	-
Total	30.82	29.61	31.02	29.42

Survey, agriculture accounts for 52.7 per cent of the total employment.³⁸ The projections of this exercise suggest a slight shift away from agriculture while the results of ARTEP's study reflect a gain in agriculture's relative share. In the wake of high growth, as the Sixth Plan envisaged such a structural transformation hardly appears convincing. This is further highlighted by the inter-sectoral productivity relationships.

³⁸ Labour Force Survey [7], p.XVII.

4.2.2 Productivity trends

The sectoral productivity implications of the projections are studied in the context of past economic growth. It must be mentioned that the inter-sectoral productivity relationships discussed are at one-digit level classification and this conceals a large amount of variation within the sectors. In the presence of the technological dualism pervading the entire economy, intra-sectoral productivity differentials might have been much higher than across the sectors. Furthermore, the distortions introduced by various government policies on the price and cost structures of economic activities hinder a meaningful assessment of productivity relationship between the sectors. Kemal,³⁰ for instance, found productivity in manufacturing at world prices to be one-third of that estimated at domestic prices for the year 1968-69.

The sectoral growth pattern of labour productivity, as reflected in Table 26, was characterized by widely divergent growth rates. Varying rates of growth in labour productivity exhibited by different economic sectors generally reflect the effect of employment growth. During the period 1961-68, for each year of which employment could be estimated, higher rates of employment growth in sectors like transport and trade were accompanied by negative growth in labour productivity. The manufacturing sector increased its labour productivity at the highest rate. The agricultural worker also experienced an improvement in his productivity. During the period 1969-74, labour productivity experienced a decline except in the manufacturing sector where it roughly remained constant. During the period 1974-78, all the sectors except transport, registered a decline.

The behaviour of labour productivity during the Sixth Plan, as suggested by this exercise, represents a shift from the past in that productivity growth is envisaged for all sectors. Construction will be the leading sector. The productivity level will still be the lowest in the agriculture sector. A rather unpleasant situation is that inter-sectoral productivity differentials will not narrow down. The productivity level in agriculture, where half of the labour force is absorbed, will decline as a fraction of the average from 0.46 to 0.43. The relative position of agriculture will deteriorate further if more labour is to be absorbed by

³⁰ Kemal [6], pp.1-11.

Table 26: Labour productivity, 1961-1978/88 per worker at 1959/60 prices

	1961	1968-69	1974-75	1978-79	1982-83 (Estimated)	1987-88 (Projected)
Agriculture	1 007	1 267	1 206	1 201	1 319	1 481
Manufacturing	1 333	1 888	2 351	2 101		
Construction	2 338	2 665	2 080	2 044	4 092	4 675
Trade	2 566	2 440	2 546	2 491	2 542	2 946
Transport	3 140	2 982	2 634	2 944	3 473	4 233

Note: Services sector is excluded because of the exclusion of armed forces from the civilian labour force. The over time data for other sources are not available.

this sector.

Cumulative investment during the period 1965-70/1978-79 works out at Rs. 277 billion in 1978/79 prices. The associated job creation during the same period amounts to 5.57 million. The cost per job by simple division amounts to Rs. 50 thousand. Assuming a 9 per cent rise in the investment price index, a job will cost Rs. 71 thousand in 1982/83 prices, which would further rise to Rs. 105 thousand in 1987/88. Job creation during the Plan period implied by our projections amounts to 3.94 million. Spread over five years and multiplied with the corresponding years, estimated cost per job amounts to Rs. 414 billion, which is less than the envisaged Plan's gross investment outlay.⁴⁰ We need to qualify the adequacy of our findings by pointing out its aggregative nature and our use of a constant capital to labour ratio.

⁴⁰ Sixth Plan [13], p.28.

4.2.3 Labour availability

In order to estimate future labour availability, we have relied for projections on the participation rates as reported by the Labour Force Survey of 1982/83. Application of the reported activity rate results in a projected labour force of 31.42 million in the final year of the Sixth Plan. In order to work out the domestic availability, the outflow of labour to the Middle East has to be estimated and duly adjusted for.

The projection of labour outflow to the Middle East is problematic given the nature of information available. The most recent population census estimated that 1.71 million persons went abroad during the last ten years and were outside the country at the time of the census count. This figure is neither a total stock of emigrants nor is it helpful in estimating the return flow. However, from the PIDE/ILO survey, one can estimate the average return flow during the period 1975-79. This is nearly 21 per cent of the outflow, though it shows a rising trend since 1975. Given the recent oil price and production cuts and the phasing out of the construction era in the Gulf States, the return of labour from these countries is a likely phenomenon. Therefore, one cannot neglect return migrants while estimating the future labour force availability in the country. Keeping this in view, we have adjusted the availability of the future labour force to account for the return flow, as can be seen from Table 27.

The three sets of projections are based on different assumptions regarding the net outflow. One estimate is made on the assumption that the net outflow is 60 thousand in the year 1982/83 and progressively reduces to zero in the terminal year. This works out to an estimated outflow of 150 thousand during the Plan period. The second calculation assumes a net outflow of 60 thousand per year during the Plan period. Under the third alternative, the net outflow is assumed to be zero for the Plan period and 10 per cent of the manpower stock abroad is added to the domestic labour market.

The domestic labour availability yielded by these procedures ranges between 31.12 and 31.62 million. A comparison between these projections with those of ARTEP and Cohen suggests that these are on the higher side. The major reason for this discrepancy is the adjustment for out-migration. The ARTEP study appears to assume no return migration, while Cohen allows a declining trend in net outflow although the

Table 27: Manpower availability and employment, in millions

	1982/83		1987/88
Population (a)	89.12		104.06
Labour force participation rate	30.19		30.19
Labour force supply	26.90		31.42
Emigration	-.06	(b)	-.150
	-.06	(c)	-.300
		(d)	.200
Net domestic availability	26.84	(b)	31.27
	26.84	(c)	31.12
		(d)	31.62

(a) The population projection is based on a growth rate per annum of 3.1%. The 1982-83 base population as well as the labour force participation rate was drawn from the Labour Force Survey 1982/83 [7, pp XV-XVI].

(b) The net outflow of labour is 60,000 for the initial year and drops to zero progressively in the terminal year.

(c) Net outflow of labour of 60,000 remains constant throughout the period.

(d) Net outflow during plan period is zero and 10 per cent of the stock of manpower outside Pakistan is to be absorbed.

estimated net outflow is higher than ours. In addition, Cohen's estimate of labour availability was the lowest. It implicitly assumed an activity rate of 29 per cent in contrast to 30.19 per cent recorded in the 1982/83 Labour Force Survey.

Under the three sets of projections cited in Table 27, unemployment rates range from 0 to 3 per cent. However, if Pakistan can maintain a net flow of out-migration during the Plan period, then unemployment is not likely to be a problem. If 10 per cent of the

emigrants return, the resultant unemployment rate will be over 3 per cent.⁴¹

4.3 Concluding remarks

Several attempts have been made in Pakistan in the past to relate the development of education with the manpower needs of the economy. However, manpower planning has not yet been integrated with the overall planning framework. The main difficulty is lack of data and a comprehensive employment strategy. A review of earlier efforts brings out the defects of manpower forecasting as an approach to educational planning. Very often manpower forecasts have not been translated into educational needs. This is the case with the latest manpower forecasts reported in this chapter, where employment elasticity has been applied as the critical parameter for the estimates of manpower needs. This also has many defects, the most important being the errors of measurement of employment, labour force, and in mapping of human behaviour into a set of well-defined categories.

With the benchmark data based on the 1982/83 Labour Force Survey, the sectoral productivities based on past trends, and the cost data on creation of jobs, aggregate manpower requirements were estimated for the period 1984-88 for the agricultural, manufacturing, construction, trade and transport sectors.

Based on the population estimates, on the labour force participation rate estimated from the Labour Force Survey, and on alternative estimates of emigration and returnees, manpower availability was estimated for three different situations. Unemployment is reasonably low and is not a serious issue under the Sixth Plan. However, if the migrant workers start to return from the oil-exporting countries of the Middle East as a result of the economic recession, there will be a problem to reintegrate them.

It was not possible in this study to estimate the mismatch in quantitative terms, a phenomenon which appears to be a problem in Pakistan. However, an analysis of mismatch in qualitative terms has been undertaken in Chapter 6. In the next chapter, we attempt to

⁴¹ Unemployment rates by level of education have been presented in Chapter 3.

analyze the development of higher education in quantitative and qualitative terms.

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5. Development of higher education in Pakistan

This chapter will discuss the network of higher education institutions in Pakistan, the higher education policy and its evolution during the post independence period, the quantitative development of higher education in respect of resources, enrolment, participation rate by sex and by region, and qualitative aspects such as the quality of educational facilities, and the phenomenon of wastage through dropout and failure.

5.1 The system of higher education

In Pakistan higher education is provided in universities and their affiliated colleges, such as engineering and medical colleges, which offer either general or professional education. There are also, of course, specialized institutions such as the Forest Institute at Peshawar, the College of Aeronautical Engineers, etc.

Universities are autonomous statutory bodies created by legislation. They are managed and controlled by specialized bodies such as the senate and syndicate with suitable representation from the provincial and the federal governments when necessary. Each university has its own territorial limits and area of jurisdiction. The federal universities, such as Allama Iqbal University, Quaid-i-Azam University and Islamic University, are intended to draw students from the entire country.

By and large, provincial universities used to be funded entirely by provincial governments, but since the announcement of the National Education Policy in 1979, funding has been provided by the federal

government. The purpose of this change was, first, to provide adequate funds and facilities for quality teaching and research and, second, to divert the money of the provincial governments thus saved towards investment in basic education to enlarge the base of the educational ladder.

Affiliated colleges remain under the academic control of the parent universities. The curricula and examinations are controlled by the universities, which also award the degrees. Moreover, the university accords affiliation on certain specific conditions, which include provision of staff and facilities to ensure satisfactory teaching. Inspection teams of the affiliating university visit colleges to ensure the maintenance of minimum standards. The affiliation is withdrawn if the facilities are not satisfactory.

Entry to institutions of higher education is based on the intermediate examination, a public examination held after twelve years of schooling. Movement up the educational ladder depends largely on the subject studied and aggregate marks obtained by the students in the public examination. Pre-medical students who pass the examination may opt for a five-year medical education or a four-year pharmacy programme, while pre-engineering students who pass the examination join a four-year course in any of the engineering disciplines offered by engineering universities and colleges. The majority of students opt for general education at the post-intermediate level, which leads to a BA/B.Sc. degree in arts or science after two years at either a college or a university.

Some students who pass the intermediate examination, particularly those of the science group, seek admission to a three-years honours course offered in major science subjects by the Universities of Karachi, Sind and Baluchistan. An honours graduate becomes eligible for a Master's degree after an additional year of study.

Education beyond BA/B.Sc. level is possible in the general universities and in some colleges. Besides the traditional disciplines, a number of universities offer M.Sc. programmes in fields as diverse as physiology, anthropology, computer sciences, communications, and fresh water biology.

Some universities, particularly Quaid-i-Azam University in Islamabad, have instituted a one-year post-M.Sc. programme leading to an M.Phil degree. Similar programmes are operative in some disciplines at Karachi, Peshawar, Sind and Baluchistan universities, while

others are being encouraged to start them. Ph.D. programmes in arts and science disciplines also exist, particularly in the older universities. However, they are much smaller than the other programmes. (For a detailed chart of the educational system see Annex A to this chapter).

In order to co-ordinate university programmes and to ensure a purposeful allocation of funds, the government established the University Grants Commission (U.G.C.) in 1973 as an autonomous corporate body to interact between government and universities. The U.G.C. prepares programmes and plans the improvement of university standards. Thus, for example, it has devised curricula to set minimum standards in collaboration with teachers, scientists and experts. The Academy of Higher Education has been set up under the administrative control of the U.G.C. for inservice training of college and university teachers, their exposure to new methods and areas of teaching, updating of knowledge, and development of skills.

For the internal management of universities, a number of alternatives have been experimented with during the last decade. Popular participation of teachers and students has been tried. The system of appointing chairmen of departments by rotation has been tested, and the membership of the senate and syndicate has often been modified to try to improve the management of the universities. The system of evaluation has been modified to improve the quality. A switch was made from an external examination to an internal assessment system. The decline in standards attributed to this move led a large number of institutions, except Quaid-i-Azam and Karachi Universities, to return to the external examination system. Here again, various options are being experimented with and evolved.

Centres of Excellence have been established in order to improve research and the quality of teaching. (See Annex B). In addition, new research centres have also been established in various basic and social sciences in order to improve and provide more facilities for M.Phil, Ph.D. and post-doctoral programmes. In order to promote detailed study of various contemporary societies, particularly those of special interest to Pakistan, Area Study Centres for research and advanced study have been established. Finally, for greater national cohesion and integration, it is of paramount importance that people of one region of a country understand the language and literature, social structure, and customs of the people of other regions in the country. Thus, five Pakistan Study Centres have been established at various universities (see Annex B).

One major change currently being considered in the system of higher education is to fuse the intermediate level into secondary education and to delink undergraduate programmes from university education under a phased programme.⁴² The idea of separating intermediate from degree education dates back to recommendations of the Commission on National Education in 1959. It had also recommended that another year be added to the programme for the Bachelor's degree in arts, science and commerce, but this proposal could not be implemented.⁴³ The recent decision of Saudi Arabia to devalue the worth of Pakistan's educational degrees probably makes this a topical and relevant issue once again. [6], p.1. These issues concern policy, which is the subject matter of the next section.

5.2 The policy of higher education and its evolution

Several themes relating to higher education run through the entire educational planning process in Pakistan. Our concern here⁴⁴ will be to identify these, highlighting important changes, rather than to concentrate on the statement of intentions in successive plans.⁴⁵ A noticeable change in the educational thinking reflected in recent plan documents, particularly the Sixth Plan, is the recognition that the base of the educa-

⁴² Sixth Plan [12], p.351.

⁴³ See the Second Plan [8], pp.339-340.

⁴⁴ This section is based on Khan [2].

⁴⁵ Given that this chapter treats the subject of the development of higher education in Pakistan, it is important to document that the plans were influenced by various educational landmarks. These include the First Educational Conference (1947), Commission on National Education (1959), the Commission on Students' Problems and Welfare (1966), proposals for the National Education Policy 1972-80, (1972), and the National Education Policy and Implementation Programme (1979). The Action Plan developed by the Federal Ministry of Education (1984) is the latest in this series of policy documents. This reinforces and complements the educational thinking embodied in the Sixth Plan.

tional pyramid needs broadening; i.e. there is an emphasis on primary education.⁴⁶ From 1974 to 1981, twelve new universities were established as well as three new campuses for existing universities (see Annex C). This timespan covers the non-Plan Period (1970-77) as well as the Fifth Plan.⁴⁷ In fact the Fifth Plan did take note of the rapid expansion of higher education and stated the intention to check it.⁴⁸ The recognition of the importance of universal literacy and of the major role of primary education in this regard goes back to the earlier plans.⁴⁹ However, the degree of determination to bring about this structural change in educational expenditure is new.⁵⁰

Primary education has been recognized as important because it can be a first step in providing equality of opportunity and a larger base for drawing real talent into higher education. For several reasons, higher education continued to develop in a lop-sided fashion at the expense of the other levels, despite the emphasis throughout the planning process on consolidation and qualitative improvement rather than on quantitative expansion at the higher level.⁵¹

One obvious reason for the lack of balance is social pressure, since higher education is viewed as prestigious and as a means of social betterment.⁵² The demand for regional balance in its provision, a sensi-

⁴⁶ See the Sixth Plan [12], p.338.

⁴⁷ The Fourth Plan allocation was made for East and West Pakistan combined, and it was therefore dropped. Until 1978, Annual Plans and Annual Development Plans were relied upon entirely.

⁴⁸ See the Fifth Plan [11], p.380.

⁴⁹ See for example the Third Plan [9], p.187, and Fourth Plan [10], p. 146.

⁵⁰ See section 3.3 to gauge the extent to which these changed priorities are reflected in allocations.

⁵¹ See for example the Second Plan, [8], p.337, and Fourth Plan [10], p.147.

⁵² Mark Blaug, et. al. [1], pp.54-55, explains the mushrooming social demand for higher education in terms of a dynamic surplus model. As jobs relating to one educational level become hard to find due to surplus at that level,

tive political issue, made the proliferation of universities almost inevitable. Almost as inevitable was the recurrent mention in Plan documents of the need for qualitative improvements since resources expended for quantitative expansion decrease those available for qualitative improvement.

Along with the emphasis on qualitative improvement, another related theme throughout the Plans is concern about poor research facilities (especially in science), deteriorating standards, and high failure rates. It is surprising to find such complaints voiced from the First Plan to the Sixth Plan.⁵³ Clearly, it is a matter of serious concern that problems recognized as early as the mid-fifties should persist to the eighties and continue to be stated as failings of the education system.

Another recurring theme in the planning documents is the emphasis on science and technology. All Plans have recognized this path to progress (or one cause of the lack of it) and urged the strengthening and expansion of both technical/vocational education as well as the teaching and research facilities in science at the higher level.⁵⁴ Simultaneously, the Plan documents have recognized the disproportionately higher enrolment in the arts and humanities at the higher level as the cause of increasing educated unemployment.⁵⁵

It has long been recognized that many colleges concentrate on arts because of the high cost of teaching science and because of the shortage of science teachers.⁵⁶ It has also been long recognized that good

students seek a competitive educational edge by acquiring a higher level of education. Thus, there is an inflation in educational demand for higher and higher levels. He also posits that since the parents of students seeking higher education are politically powerful and its clients politically turbulent, it has been difficult (as evident in Pakistan's case also) to redirect expenditure away from the higher to other levels. In fact, in Pakistan the reverse has often occurred via a process of reallocation.

⁵³ See the First Plan [7], p.543, and Sixth Plan [12], p. 348.

⁵⁴ See the Third Plan [9], pp.182, 202-203, and 212, and Sixth Plan [12], p.348.

⁵⁵ See the Fourth Plan, [10], p.147, and Fifth Plan [11], p.326.

⁵⁶ See the Fourth Plan, [10], p.202.

teachers are the backbone of the educational system and therefore adequate salaries and consequently prestige for their social role are essential.⁵⁷

Thus, all the Plans share to a great extent the same proposals and concerns. Two apparently novel policy features in the Sixth Plan, inducing the private sector into greater participation in the educational process and utilizing 'user fees' to recover costs, have also been on the agenda before.⁵⁸ Education policy is a delicate issue with the public since it affects almost everyone—especially the influential and local urban population. Changes designed for long-term improvements have short-term structural adjustment costs and are therefore resisted. This could partly explain the repetition of priorities in the policy documents. Another part of the explanation could be reluctance to allocate resources to the educational sector (see Table 28). Nonetheless, the extent to which one finds planners voicing the same concerns about high failure rates, deteriorating standards, regional inequalities and unbalanced enrolments by subject and by sex is discouraging. In the analysis of survey data some of these issues will be taken up. In the next section, an analysis of some of the characteristics pertaining to the educational sector is presented to examine the extent to which planners' concerns and statements of intention are reflected in quantitative terms.

5.3 Quantitative development in higher education

Planners most frequently express reservations about the lack of adequate facilities in higher education. One commonly accepted reason for this shortfall is that while new universities are launched with adequate preparation, colleges are often upgraded to university status without providing the requisite facilities.

Another problem seems to result from the accounting distinction between development and non-development expenditure. Development expenditure (mainly capital in nature) is relatively better planned due to

⁵⁷ Ibid, p.187

⁵⁸ For the policy issues in the Sixth Plan, see [12], p. 357. For the earlier mention of these proposals see the Second Plan, [8], p.341, and the Fourth Plan, [10], p.151.

federal assistance. Non-development funds are a provincial responsibility, and if they are not provided in time and in the requisite quantity, the quality of infrastructural services can suffer. This dichotomy is also considered to lead to a bias towards capital intensity in higher education.⁵⁹

Inadequate resources for the whole educational sector can result from the reallocation of funds earmarked for the educational sector to what are believed to be high priority sectors. Within the educational sector itself, higher education has at times drawn funds from other levels. In fact, the Fifth Plan had stated that to accentuate the emphasis on school level education, funds targeted towards it would be made non-transferable; unutilized funds would be allowed to lapse.⁶⁰ Since the whole educational sector may itself be threatened by redirection of resources to other sectors, a similar provision could be made binding to ensure that the emphasis given to education in the initial allocations is not dissipated later.

In sub-section 5.3.1 below, expenditure on education in Pakistan over time is contrasted to several other South-Asian countries to indicate roughly the overall priority it commands. In sub-section 5.3.2 educational expenditure within Pakistan is examined in more detail. Also, the outcome of resource use is appraised in terms of the general progress in participation rates and resource availability.

5.3.1 An inter-country comparison of educational expenditure

Educationists have complained that Pakistan's educational expenditure is too low. To see how justified such claims are, Pakistan's educational expenditures are contrasted both with those in other South-Asian countries and with international norms.

As can be noted from Table 28, although Pakistan's expenditure on education as a percentage of GNP falls in the middle, its expenditure as a percentage of the budget for 1980 is the lowest shown. In fact, its expenditure as a share of the GNP declined to 1.5 per cent in 1982/1983, although it is to be increased to 2 per cent on an annual basis for the Sixth Plan period. Also the target for the budgetary ratio

⁵⁹ Fifth Plan [11], pp.301-302.

⁶⁰ Fifth Plan [11], p.303.

Table 28: Public expenditure on education as a percentage of GNP and of total Government expenditure (1970, 1980)

Country	Percentage of GNP		Percentage of total government expenditure	
	1970	1980	1970	1980
Afghanistan	1.1	1.7	-	12.7
Bangladesh	1.1	1.5	13.6	7.0
India	2.8	3.2	10.7	11.6
Nepal	0.6	1.8	6.7	8.3
Pakistan	1.7	2.0	4.2	4.6
Sri Lanka	4.0	2.2	13.6	5.9

Source: Unesco, drawn from Khan [4], p.9.

has been increased from 3.6 per cent during the Fifth Plan to 7 per cent for the Sixth Plan (see Table 29).

Although it would appear encouraging, it is less so when compared with international expenditure norms.

Pakistan's Sixth Plan commitment to educational expenditure is half that of the 1977 commitment of developing countries and a third that of the developed countries (see Table 30). The specific commitments to higher education are presented in the next sub-section.

Table 29: Percentage budget share of education over the plan periods

Period	Share of Education
First Plan (1965-69)	4.8
Second Plan (1970-75)	4.4
Third Plan (1975-80)	4.3
Fourth Plan (1980-85)	4.6
Fifth Plan (1985-90)	3.6
Sixth Plan Targets (1990-95)	7.0

Note: It should be kept in mind that increases in target allocations are not committed expenditures.

Source: Ministry of Education drawn from Khan [4], p.12.

Table 30: Public expenditure as a percentage of GNP and national budget

Year	% of GNP		% of National Budget	
	Developed Countries	Developing Countries	Developed Countries	Developing Countries
1960	4.0	2.3	11.3	11.7
1965	5.2	3.0	15.2	13.1
1970	5.7	3.4	16.1	13.8
1974	5.7	3.9	15.6	15.1
1977	6.4	4.1	21.3	16.3

Source: World Bank, drawn from Schiefelbein [19], p.5.

5.3.2 Allocations, achievement and enrolment in higher education

The question of the optimal allocation to higher education is a complex one. The two most widely used quantitative methods in educational planning are that of manpower forecasting and of calculating the rates of return to different levels of education. Neither is free from flaws and controversies.⁶¹ A consensus has emerged among those scholars who prefer the rate of return method. They consider that for countries still at a relatively low level of economic development, the social rate of return to primary education is the highest.⁶² This has influenced policy decisions in Pakistan as well.

Nevertheless, moving from a knowledge of rates of return to specific allocations by level still requires some grouping. If rates of return have been calculated at several points in time, one could use the trends to allocate resources within the education sector on the principle of equalizing returns at the margin to the different levels.

With this brief background, Table 31 shows the allocations to and within higher education over the six Plan periods.

Total percentage allocations to higher education have dropped with the major fall in the non-Plan period and once again in the proposed allocations for the Sixth Plan. The latter decline is in keeping with the Sixth Plan educational philosophy.

Turning to the different levels within higher education, technical education allocations rose almost five-fold from the First to the Third Plan and then were halved from the Third Plan to the proposed allocations for the Sixth Plan. There has been a steady decline in college allocations so that the proposed Sixth Plan allocations are about half of those of the First Plan. Apart from the First Plan allocation of 17.4 per cent, university allocations have fluctuated within a narrow band ranging from 10 to 13 per cent.

These allocations are supposed to translate themselves into the building, upgrading and improvement of institutions and consequently to an increase in enrolments. Table 32 outlines the success in this regard

⁶¹ For an overview of educational planning theory and techniques, see Bowman [2], pp.1-71.

⁶² G. Psacharopoulos [18], pp.73-110.

Table 31: Percentage distribution of allocations to higher education by level and plan

	Technical	College	University	Total
First Plan (1955-60)	4.8	13.4	17.4	35.6
Second Plan (1960-65)	18.6	14.7	12.7	46.0
Third Plan (1965-70)	23.2	11.3	10.5	45.0
Fourth Plan (1970-78)	13.9	10.9	11.6	36.4
Fifth Plan (1978-83)	13.3	9.5	12.2	35.0
Sixth Plan targets (1983-88)	11.8	6.5	10.6	28.9

Source: Sixth Plan [12], p.549.

over the various Plan periods.

Targets were not available for the First Plan and the Fourth was disbanded. From the evidence available, fairly realistic targets appear to have been set since the achievement rates are quite high.

Thus allocations have helped to establish institutions and subsequently an increase in enrolments over the Plan periods with reasonable success. Table 33 below juxtaposes the actual growth in institutions (a proxy for social supply) with the growth in enrolments (a proxy for social demand)

Using the interpretation suggested above, Table 33 reveals that social demand has far outstripped the supply of facilities for professional colleges and universities. If this trend continues into the future, there will be a tremendous pressure on higher educational institutions given the planners' intentions to halt further expansion at the higher level. This points to the need for more innovative use of capacity in existing institutions.

Table 32: Average percentage of target achievements in higher education by plan period

Level	Second		Plan period Third		Fifth	
	I	E	I	E	I	E
Technical	85	153	80	95	80	90
College	137	-	104	-	111	101
University	100	-	120	-	100	77

I = Target achievement related to institutions.

E = Target achievement in enrolments.

Source : Khan [4], revised version.

By further disaggregating the data, it is possible to identify various aspects of this increase in enrolment, such as the growth incidence by level, sex, faculty and region. In the tables that follow, this information is presented for the last decade.

As is evident from Table 34, in general universities male enrolments are much higher in absolute terms than those of females, and the margin of difference has been increasing over time. This differential is immense for technical universities. Another striking point is the decline in advance level enrolment in technical universities. For females, enrolment dropped from 11 in 1973/74 to a mere 2 in 1981/82. This decline may reflect the increased number of students going abroad for higher education in technical subjects.

Given the emphasis on science and technology, the larger growth in enrolment for both sexes up to the Master's level in technical relative to general universities is encouraging. To emphasize this, the distribution of enrolment by faculty is presented in Table 35. It is fairly clear that the growth in enrolment in science-based subjects (except agriculture) has been quite high. Perhaps one element concerning the bias in enrolments towards arts and humanities and general science may soon become less pressing.

Table 33: Educational achievements in higher education during various plan periods

	General colleges		Engineering universities and colleges		General universities	
	Nos.	Enrolments 000 (Classes) XI-XIV)	Nos.	Engineering Graduate Enrolment	Nos.	En- rolments
First Plan (1955-60)	119	51	3	1 251	3	1 662
Second Plan (1960-65)	190	115	4	1 632	4	8 319
Third Plan (1965-70)	291	200	6	3 800	6	15 475
Annual Plans (1970-78)	440	255	6	9 500	10	-
Fifth Plan (1978-83)	534	331	5	12 800	15	17 000
Sixth Plan Targets (1983-88)	602	425	7	15 500	15	18 500

Source: Sixth Plan [9], p 553.

Another concern for planners has been to attain a regional balance in enrolments. Table 36 presents a regional picture of higher education over time. The greatest progress in participation rates was in Sind.

Table 34: Growth in university enrolments in higher education by level and sex

	Enrolment					
	1973/74			1981/82		
	Total	F	M	Total	F	M
<i>All Universities</i>						
Bachelor's level	16 531	1 961	14 570	28 180	3 368	24 812
Master's level	8 133	2 402	5 731	13 977	4 150	9 827
M.Phil/Ph.D.	392	85	307	542	107	435
<i>General Universities</i>						
Bachelor's level	12 096	1 947	10 149	16 208	3 272	12 936
Master's level	7 432	2 394	5 038	12 538	4 104	8 434
M.Phil/Ph.D.	286	74	212	439	105	334
<i>Technical Universities</i>						
Bachelor's level	4 435	14	4 421	11 972	96	11 876
Master's level	701	8	693	1 439	46	1 393
M.Phil/Ph.D.	106	11	95	103	2	101

Notes: The data do not include diploma/certificate level enrolments. Technical includes engineering and agricultural universities.

Source: [15].

Baluchistan's progress is encouraging considering it is comparatively a disadvantaged province. In this regard, the declining participation rate in NWFP and Punjab is a cause for concern.

We have so far concentrated on allocations and enrolments separately. The two can be combined into a ratio of allocations per student—a rough indicator of the quality of education imparted. Although, separate ratios are presented for recurring and development allocations, the former may be more meaningful because of the lumpy nature of development expenditure.

Table 35: Percentage distribution in enrolments at university by faculty, level and sex

	1973/74		1981/82	
	Total	Female	Total	Female
Agriculture	3 692	21	3 458	11
Arts	6 506	2 366	10 875(a)	4 018
Business Administration	811	47	n.a.	n.a.
Commerce	1 532	22	3 485	345
Education	1 073	276	1 133	1 401
Engineering	5 140	14	9 757	96
Home Economics	148	148	n.a.	n.a.
Law	1 697	35	2 593	111
Medicine	966	138	n.a.	n.a.
Pharmacy	650	158	1 243	353
Science	5 522	1 412	10 087	2 344

Note: For 1973/74, Diploma/Certificate Courses are excluded.

(a) For 1981/82, only data on social sciences are available.

Source: [15].

Table 37 shows that recurring allocations per student in real terms are highest for universities and have increased for both universities and colleges by about three-fifths and four-fifths respectively from the Non-Plan to the Fifth Plan period.

The change in per student expenditure over time is difficult to interpret. On the one hand, an increase over time may well be interpreted as an improvement in the quality of educational services being imparted. On the other hand, declining per pupil expenditure over time may be indicative of economies of scale.⁶³

⁶³ See Psacharopoulos [19], pp.21-31. For a case qualifying the use of parallels between education and the general production process see Majumdar [5], pp.1-18.

Table 36: Total enrolment and participation rates in universities, by province.

Province	Enrolment	1973/74	Enrolment	1981/82
		Participation Rate(%)		Participation Rate(%)
Punjab	12 023	.19	15 777	.18
Sind	9 898	.40	16 968	.50
NWFP	4 356	.33	4 798	.26
Baluchistan	868	.20	2,134	.30

Note: (a) To calculate participation rates, the age group 15-24 was used. Although this understates the actual participation rate, the numbers are still meaningful for inter-provincial comparisons.

(b) Population estimates were available for the census years 1972 and 1981. To get the relevant numbers for the table above, the population growth rate between this time span was used for simple interpolation.

(c) Federal Area is excluded.

Source: For enrolments [15]. For population estimates [13].

Since we have time-series data (unfortunately only over a nine-year period) for most universities in Pakistan, by using regression analysis we were able to separately test by university for the existence of economies of scale. However, even if the data were to suggest a significant inverse association of per pupil costs and enrolments, economies of scale could be inferred only if outside evidence revealed a constant or improving quality of educational services. Since sufficient evidence was not avail-

Table 37: Recurring and development allocations per enrolled student in constant prices by level

	Non-Plan Period (1970-78)		Recur- ring	Fifth Plan Develop- ment
	Recur- ring	Develop- ment		
Technical/				
Professional	305.5	369.8	-	-
Colleges	718.4	267.4	1 297.6	462.2
University	2 543.5	2 011.37	4 118.0	-

Source: See revised paper by Khan [4].

able, the results of the regression of per pupil expenditure on enrolments should be interpreted with care.

Before presenting these results, it may be instructive to observe the summary data on per pupil expenditure presented in Annex D, Table I. Recurring and development expenditures per pupil in constant prices were averaged for three years around and including 1974/75 and 1980/81 (the base and terminal years). The averaging was intended to take care of extreme values and short-term fluctuations. The results of this exercise show a mixed outcome. Per pupil recurring expenditure declined for six out of the ten universities for which data were available. Per pupil development expenditure declined for all universities with the exception of Punjab University. In both cases, the spread across universities in per pupil expenditure levels declined.

Except for Multan University, the per pupil recurring expenditure for the more newly established universities like Gomal and Quaid-i-Azam was higher than for the older, more established universities.⁶⁴ This was even more so, (in all cases) as may be expected, with real development expenditure per student. Both recurring and development expenditure per pupil declined for the newer universities from

⁶⁴ For dates of establishment see Annex C.

1974/75 to 1980/81. Multan University was again the reverse exception where recurring expenditure per pupil rose so that it was the highest in 1980/81 at Rs. 4,938.⁶⁵

The specifications used to test for economies of scale were as follows:

$$1) \quad Y_i = \beta_0 + \beta_1 \left(\frac{1}{X_i} \right) + u_i$$

$$2) \quad Y_i = \beta_0 + \beta_1 \left(\frac{1}{2X_i} \right) + u_i$$

$$3) \quad Y_i = \beta_0 + \beta_1 X_i + \beta_2 X_i^2 + u_i$$

Where Y is per pupil expenditure and X is enrolments.

The first two specifications are the reciprocal and hyperbolic functions whereas the third tests for the conventional U-shaped cost curve. In each case the best results, using the standard criteria of the best fit and high *t* and *F* values, have been presented.

Recurring expenditure per pupil is generally used to estimate the short-run cost curve and total expenditure (recurring and annualized development expenditure) to estimate the long-run cost curve. We have estimated both curves although development expenditure has not been annualized.

The results are reported in Annex D, Table II, for the eight universities (out of ten) for which they were significant. In all cases, the better results were evident for Y_1 as a dependent variable with one exception (Gomal University). The negative and significant co-efficient for enrolments (X_1) does confirm the existence of economies of scale. Interestingly, in four out of eight sets of regressions, the best fit was for the U-shaped curve. This seems to suggest that as enrolment increases beyond a certain point, overcrowding may result in a rising per pupil recurring expenditure. This would correspond to the 'increasing cost' portion of a conventional cost curve. However, the magnitude of the co-efficients for X and X^2 suggest a very slow rise in per pupil expendi-

⁶⁵ Pakistan's ratio of high to secondary level expenditure at 10 was close to that of the upper middle income country-group category and lower than the 13 for the lower middle and middle middle income country groups (see Khan [3], Table II-8).

ture after a fairly rapid initial decline.

The results are of sufficient interest to have the issue explored in further depth. Quality, relative prices of capital to teacher salaries, average class size and subject mix should be controlled for and where relevant, the optimum size of universities computed.

As stated earlier, one of the main hypotheses to be addressed in this chapter is whether there has been a decline over the last decade in the quality of higher educational services. Various proxy indices are used in the following section to address this issue. A tentative assessment based on this evidence is arrived at in the concluding section of this chapter.

5.4 Some qualitative aspects

Several proxy measures have been used to identify the effects of quantitative expansion on the quality of higher education. These are: (1) Student-teacher ratios—a higher value would indicate 'falling' quality; (2) Teacher qualifications—the higher the proportion of higher degree holders, the better the quality of instruction; and (3) Teaching facilities, e.g. laboratory, library and research facilities. In addition, a subjective assessment was made of the teaching system (term system or semester system and their adequacy) and the availability of interinstitutional co-operation for the betterment of higher education. These aspects are discussed in the following sub-sections.

5.4.1 Student-teacher ratios

Student-teacher ratios over time are presented both by faculty and university in Annex D, Table III.⁶⁶ Only commerce at 40 and law at 93 have ratios high enough for concern. However, in both these cases the ratios have declined over the time period being used (from 1977/78 to 1981/82). In fact, such a decline appears to be evident for most faculty student-teacher ratios, with the greatest percentage decline occurring for the education and pharmacy faculties.

⁶⁶ Some departments do constitute faculties on their own. Faculty is generally used to refer to the teaching staff as a 'body'.

General university student-teacher ratios shown in Annex D, Table I, declined in all cases for the more newly established universities (particularly for Islamia University, Bahawalpur (from 19 to 7) whereas they rose, slightly in some cases and considerably in others, for the more established universities. Karachi University pupil-teacher ratios rose the most (from 16 to 24) followed by Punjab University (from 19 to 22); these to begin with had the highest ratios in the benchmark year.

The reverse is true for technical universities where the ratios have risen in all cases. The greatest increases are for Mehran University (from 13 to 20) and NED, Karachi (from 24 to 29). The latter once again had the highest ratio in the benchmark year.

To summarize, in general universities, student-teacher ratios have declined during the seventies. However, in technical universities they rose. Also, it appears that universities with the highest ratios in the past show the largest increase over time for both general and technical universities. To see if this should be a cause for concern, we compared the average university ratios for Pakistan to those of other countries at different stages of development.

As can be seen from Table 38, using the cross country-group standard Pakistan's numbers are reassuring since they are about equivalent to the average of countries in the upper middle income group.

Some additional information on pupil-teacher ratios was available from the survey responses in a disaggregation by provinces.⁶⁷ The sub-sample size was adequate only at the Master's level to calculate and present percentages.

Table 39 confirms the evidence based on compiling the secondary data. All provinces have low pupil-teacher ratios, the bulk of the cumulative percentages falling in the '<20' category. There has not been much change over the time-span covered in the survey responses (1974/75—1981/82). NWFP has, for both the base and terminal year, a very low (<10) pupil-teacher ratio for the responding institutions at the Master's level.

Student-teacher ratios give a fairly good indication of the adequate availability of teaching staff. Some further information pertaining to teaching staff, disaggregated both by province and functional categories, was available from the sample data and is presented in Table 40.

⁶⁷ For a description of the sample of educational institutions and the definition of an institution see Annex E.

Table 38: A cross country-group comparison of pupil-teacher ratios

Pakistan:	General	12
	Technical	13
Other countries (by income group, according to the World Bank):		
	Low	18
	Lower middle	19
	Intermediate middle	16
	Upper middle	14

Note : Pakistan's ratios are an average for the university groups for 1977/78. The World Bank data are for 1975 and apply to all higher education. Unfortunately, complete data for the university affiliated colleges were not available. Pakistan, by the World Bank country ranking in the same source (pp.100-101), fits into the low income category.

Source: For Pakistan see UGC [15]. For the country groups see the World Bank [20] p.107.

Administrative staff, contrary to general belief, have increased at the slowest rate. There does appear to be a growth in numbers of teaching staff at all functional levels and provinces for the institutions in the sample. NWFP is the only exception, having a very low growth in teaching staff and a decline in the research staff over the period 1974/75 to 1981/82. Given the low student-teacher ratios identified for the NWFP in Table 39, the slow growth in teaching faculty is not a cause for concern.

Respondents were asked to indicate courses for which teachers were not available for the same base and terminal year. As can be seen from Table 41, a fairly high percentage of respondents reported a shortage of teaching staff at the Bachelor's level and an even greater percentage did so at the Master's level. Moreover, there has been an increase in the number of courses reported to have an unsatisfactory teaching situation (from 39 per cent to 46 per cent).

Table 39: Pupil/teacher ratios at the master's level by region, in percentages

Student Teacher Ratio	Province									
	Punjab		Sind		NWFP		Baluchistan(a)		Federal(a)	
	1974/75	1981/82	1974/75	1981/82	1974/75	1981/82	1974/75	1981/82	1974/75	1981/82
Less than 10	50	64	31	23	100	100	45	46	80	80
Less than 20	30	18	36	44	-	-	27	31	20	7
Less than 30	-	18	18	13	-	-	27	-	-	7
Less than 40	-	-	10	13	-	-	-	23	-	-
Less than 50	-	-	3	3	-	-	-	-	-	-
50 or over	20	-	3	3	-	-	-	-	10	10
No.	20	28	39	39	19	20	11	13		

(a) The results for Baluchistan and the Federal Area are not reliable since percentages have been calculated using a very small base. Fifteen to twenty is generally considered as the minimum acceptable number in survey analysis [18], p.187

Table 40: Index showing change in staff by region and functional category, 1980/81 (1974/75 = 100)

Region	Functional category				
	Teaching	Laboratory	Library	Research(a)	Administration
Punjab	137.5	196.0	141.7	273.0	130.5
Sind	128.3	135.3	314.3	122.0	131.8
NWFP	106.8	160.2	121.4	75.0	179.4
Baluchistan	160.4	155.9	133.3	200.0	182.1
Federal	269.4	128.1	136.7	187.5	179.2
Overall	152.1	147.1	175.2	170.5	147.6

(a) The research category includes an average of research associates and faculty exclusively concentrating on research. The sample captured none in the latter sub-category for NWFP and Islamabad.

There seems to have been little notice taken of these shortages. Home economics and English were most frequently cited as having an inadequate teaching staff in 1974/75 at the Bachelor's level and they reappear as the worst affected courses in 1981/82—in addition to economics and islamiyat. Similarly at the Master's level, mathematics and zoology emerged as most affected in 1974/75 and once again in 1981/82. Only botany could be removed from the worst affected list and general history added. At the advanced level, botany was cited as being in a poor teaching position in both 1974/75 and 1981/82. Also at this level architecture was among the courses most frequently mentioned as having an unsatisfactory teaching position in 1974/75 and geology held this dubious distinction in 1981/82. The recurrence of courses as worst affected after a nine-year period is probably of as much concern as the high and increasing number of courses with inadequate teachers. Thus, although the average student-teacher ratios suggest a satisfactory staffing position there is room for investigating

Table 41: Number of courses reported to be in an unsatisfactory teaching position

Year	Level		
	Bachelors	Masters	Advanced
1974/75	21 (17)(a)	39 (31)	5 (4)
1981/82	20 (16)	46 (37)	9 (7)

(a) Numbers in parentheses are percentages.

Note: The base used for percentage calculations is 124, the total number of courses coded. Since not all institutions offer all courses, the percentages are likely to be understatements, perhaps significantly so.

individual course positions to attain an overall balance.

Although having an adequate number of teachers is important, this does not provide a complete picture of the teaching situation. More is added when we look at teachers' qualifications.

5.4.2 Qualifications of teaching staff

Given the infrastructure of post-graduate research and studies in Pakistan, a certain importance has to be attached to degrees obtained abroad. Availability of personnel with foreign degrees, and particularly doctoral degrees, provides some indication of the quality of teaching staff. The percentage of Ph.D's is used here as an indicator of such.

The evidence presented in Annex D, Table I, is fairly heartening given the basic premise in the above paragraph. Ph.D's as a percentage of total staff increased for all faculties from 2.6 per cent in 1977/78 to 21.8 per cent in 1981/82. The increase was particularly notable for the pharmacy and science faculties, where, by 1981/82, over one-third of the teaching staff had earned doctorates. However, for engineering the

increase in the numbers of staff holding doctorate degrees was from 2 per cent to only 6.7 per cent. This probably reflects the higher salaries commanded by engineering degrees in the private sector both abroad and locally.

Although, the increase by faculty is reflected in an across the board increase by university, the higher numbers also show a higher spread. Thus there is a wide disparity between 52.9 per cent Ph.D. staff for the Quaid-i-Azam University and the 7.1 per cent for Gomal University. Similarly, Peshawar, Baluchistan, Multan, and Islamia University have relatively less Ph.D. staff as a percentage of the total (under 20 per cent) albeit they registered a considerable increase over 1973/74. Some towns may be considered more attractive and to some extent a snow-balling effect may be operative so that faculties which are on average more qualified draw the more qualified.

Overall, technical universities did not fare as well by comparison (from 2.5 per cent in 1973/74 to 14.7 per cent in 1981/82). The alarming case is that of the Lahore Engineering and Technical University, where the percentage of Ph.D's on the faculty dropped from 6.6 per cent in 1973/74 to nil in 1981/82. Conversely, the striking positive development was at the Agricultural University, Faisalabad, where the increase was from nil in 1973/74 to 26.8 per cent in 1981/82. Interestingly, the leap in Ph.D's on the faculty took place between 1977/78 and 1981/82, with the change between 1973/74 and 1977/78 being very marginal. This suggests a programme of foreign training started in the early to middle seventies. Alternatively, probably due to push (tighter educated labour market in the West) and pull factors, many more qualified personnel are returning after completing their training abroad.

5.4.3 Teaching facilities system

Like access to well qualified teachers, access to good and well-equipped libraries is a necessary element for quality education. Given that developing countries are behind the West in the generation and documentation of knowledge, access to current foreign journals may be viewed as a prerequisite in the process of keeping up to date. In general, one finds disappointing results with regards to the availability of foreign journals for the years for which data are available (see Annex D, Table I). Between 1973/74 and 1977/78, the supply of new journals to universities

appears to have been erratic. In addition, most universities showed either no change or a decline in access to foreign journals. Some technical universities did reveal considerable progress in the availability of current foreign journals. However, the distribution of current foreign journals amongst universities, both general and technical, was very uneven so that a few drew the bulk of them and the rest had none.

This point is accentuated if we judge the strength of the individual libraries by the total books in their possession as a percentage of the total books in all university libraries in 1977/78. Punjab and Peshawar, admittedly the older universities, account for three-fourths of the total available library books. The imbalance is more striking for technical universities, where the Agricultural University of Faisalabad has 97 per cent of all technical university library books. At least until 1977/78, Sind Agricultural University, N.E.D. and Mehran Engineering Universities had no library to speak of.

The perceptions of teachers indicate less alarm about the adequacy of library and research facilities than the secondary data on library facilities suggested might be the case. This is especially surprising since the survey data include all higher educational institutions (i.e. including affiliated colleges) and university facilities could be expected to be superior. Table 42 shows positive responses received concerning satisfaction with available library, research, and laboratory facilities.

In the non-science category, 64 per cent of respondents considered library facilities to be adequate for teaching and over half of the science group did so.⁶⁸ Both groups expressed a high level of dissatisfaction with the research facilities. However, a positive note is that over two-thirds of the science group expressed satisfaction with laboratory facilities.

⁶⁸ On the one hand, a very hard worker with exposure to an advanced academic environment would be dissatisfied with better than average developing country facilities—if expectations have not been revised. On the other hand, a lower qualified teacher/researcher may view lower than average facilities as adequate. This is mentioned as an example of the caution needed in relying on subjective responses evoked by survey questionnaires. Sample surveys despite such problems, are a cheap and useful method of gathering information.

To see if plans for expansion of an institution's teaching facilities corresponded with respondents' perceptions of the inadequacy of such, several cross tabulations were run to construct the following table. (see Table 43).

Table 42: Percentage of respondents by field of specialization viewing teaching facilities in their institutions as adequate

Reference to	Science	(No.)	Other	(No.)
Laboratory	68	(63)	37	(30)
Library	54	(66)	64	(77)
Research	40	(50)	26	(50)

Table 43: Percentage of respondents dissatisfied with teaching facilities expecting expansion

Reference to	Percentage	No. of respondents
Laboratory	92	37
Library	74	58
Research	74	65

If expectations of expansion are highly related with actual expansion, as they may reasonably be expected to be, then Table 43. provides encouraging evidence of institutional response to deal with shortcomings perceived by the faculty.

Traditionally, Pakistan has had a term system with an annual examination at the end of the academic year. Almost a decade ago, the semester system, was selectively introduced. Although, this has been criticized on various grounds, it has not entirely disappeared from the academic scene. Out of the total responses on this issue, 47 per cent were teaching on a term system, 40 on a semester system and the rest on a mixed (term and semester) or some other system. Table 44 presents the degree of satisfaction expressed by teachers on these alternative systems.

Table 44: Expressed level of satisfaction with various alternative teaching systems, in percentages

	Term	Semester	Mixed
Highly satisfied	44	33	33
Moderately satisfied	40	49	22
Least satisfied	16	17	44
No.	98	87	63

Teachers seem to find the mixed system the least satisfactory and still prefer the term system. However, the semester system does seem to be gaining some level of acceptance.

Information on two other aspects of teaching facilities was also available from the survey responses. The first pertains to teacher refresher courses and the second to inter-institutional arrangements. Thirty per cent of the respondents (137) answered that their institutions did give teachers access to refresher courses. Cross-tabulating the responses by field of specialization did not in general result in any significant difference in the percentages of positive responses. The only exception was technical fields, which with 16 per cent positive response was significantly below the average positive response - using an *t* test of differences in percentages. This is particularly low, considering the field in question is one where the practitioners most need to keep up to date with the rapid pace of progress.

Inter-institutional arrangements are more common than refresher courses. Respondents chose the most important inter-institutional arrangement existing in their institution. The responses have been disaggregated by province to see whether there was a systematic difference in the types of arrangements existing across the different provinces. As can be noted from Table 45, co-operation among institutions was lowest at the research level in all provinces. Also, provincial institutional emphasis differed; inter-institutional links in the Punjab were the highest for finals evaluation, for teaching programmes in Sind and the Federal Area, and for practicals and viva work in the NWFP.

Table 45: Inter-Institutional arrangements by Province, in percentages

Inter-Institutional arrangements in	Combined	Punjab	Sind	NWFP	Baluchistan	Federal
Teaching/Learning programmes	27	21	41	14	11	30
Finals evaluation	18	42	12	0	22	10
Practicals/viva work	23	18	16	50	22	20
Research	6	3	6	4	11	10
None	25	15	24	32	33	30
No.	142	33	49	22	18	20

The overall combined emphasis based on the actual responses was compared to the subjective evaluation of what respondents considered important (see Table 46).

Table 46: Ranking of various Inter-Institutional links based on actual responses and subjective evaluation

Ranking

Inter-Institutional arrangements in	Actual Situation		Subjective Evaluation		
	Combined percentages	Ranking	Ratings(a)	Ranking	No.
1. Teaching/Learning	27	1	2.12	3	93
2. Finals evaluation	18	3	2.17	2	91
3. Practical/viva work	23	2	2.22	1	105
4. Research work	6	4	1.82	4	85

(a) Respondents were asked to evaluate the importance of inter-institutional arrangements with 1 being of highest importance and 3 the lowest. The numbers in column three are a weighted average of these evaluations after reversing the codes so that 3 represents maximum importance.

No. represents the sub-sample for the average rating calculations.

Overall, the attitude of the respondents to the various inter-institutional arrangements is lukewarm—being close to 2. The actual situation does not correspond with the subjective evaluation which ranks co-operation in practicals and viva work as most important. The only exception is research and it is a matter of great concern that it ranks last both with regard to the actual inter-institutional links and the subjective evaluation of its importance.

Adequate numbers of teachers, their qualifications, the facilities available to them, and the system of teaching are all of direct relevance to students. However, of primary importance to some of them is being able to finance their education. Most students in Pakistan rely on the

family for funding their education although a sizable proportion rely on scholarships. Since this issue is an aside from the main path of analysis being pursued in this Chapter, a brief description of the provision of scholarships, by university, is presented in Annex F. Transition rates as quality characteristics of the higher education system are discussed in the next section.

5.4.4 Transition rates

Normative significance need not necessarily be attached to a high pass percentage rate. In fact, high failure rate has been cited in the popular media as a sign of rigorous requirements and a rising pass percentage over time as an indication of declining standards. Neither interpretation is adopted here. The purpose here is to describe what has been happening over time and to indicate the differences across university and faculty.

In general, there has been a decline in pass percentages across all universities between 1977/78 and 1981/82 (see Annex D, Table I). The only noteworthy exception is Multan University where the pass percentage rose during this period from 26 to 63 per cent.⁶⁹ The pass percentage for technical universities is considerably higher, but even here the average pass percentage declined from 93.2 to 81.8 per cent. For general universities, the pass percentage was in most cases close to or below fifty (with the exception of 87 per cent in 1981/82 for Quaid-i-Azam University) with an average in 1981/82 of 46.1 per cent.

This decline in pass percentage is reflected, as expected, in the percentage distribution of passes by faculty in Annex D, Table I. The major declines are for agriculture and business administration (which includes administrative sciences). The lowest pass percentage is in the arts (the dominant area of specialization by far), and this probably reflects screening due to the sensitivity in educational planning to the limited number of positions available for arts graduates.

⁶⁹ The number who appeared for examinations at Multan University more than halved over this period. The only other universities for which the numbers appearing declined were Punjab and Sind Agricultural University at Tandojam.

Of the faculties represented in Annex D, Table I, there has not been much change in the percentage distribution of output.. probably due to the short time span to which the data restricted the tabulations. Even so, a few tentative general observations are proffered. There is a small decline in the percentage output of arts, education and home economics and a corresponding rise for professions such as medicine, law, and business administration. The major rise was for medicine (from 4 per cent to 7.5 per cent) and the major decline for education (from 9.5 per cent to 4 per cent). The policy decision to reduce the number of places in medical schools is a subject of current debate. Pharmacy was the only profession with a decline in the percentage of output from an initially low 0.5 per cent to only 0.1 per cent. This is indeed surprising considering the striking increase over time in the proportion of total teaching staff with Ph.Ds for pharmacy.

Successfully graduating and becoming part of the output statistics comes at the end of the stages of the academic cycle. These include being successfully admitted and avoiding becoming part of the wastage statistics. From the survey data some information was available on all stages of the academic cycle, which allowed calculations of the admission, wastage, and failure rates by region and field of specialization. Table 47 presents a regional disaggregation.

At the Bachelor's level, there was very little change in either of the rates over time. At the Master's level there was again little change for Sind and Baluchistan but considerable increases for the other regions, particularly the Federal Area. The latter had the lowest rates overall in 1974/75 and the highest for 1980/81. The phenomenal rise of the retention rate from 22 to 95 per cent is especially striking. In general, all rates for all provinces at the Master's level were higher than at the Bachelor's level.

Admission rates at the Master's level were generally over 50 per cent, with the exception of the Punjab where they registered an increase over time but were still 29 per cent in 1980/81. By comparison the weighted average pass percentage at the Bachelor's level was only 27 per cent. NWFP had only a 10 per cent admission rate in 1974/75 and the Federal Area revealed the same low percentage for 1980/81. Similar differentials existed by level for the retention and pass percentages. Retention rates were generally well above 50 per cent at the Master's level, with Punjab having the lowest in 1980/81 of 54 per cent. At the Bachelor's level, they were generally well below 50 per cent, with

Table 47: Admission, retention and pass percentages by level and province

	Bachelor's degree									
	Punjab		Sind		NWFP		Baluchistan		Federal Area	
	1974/75	1980/81	1974/75	1980/81	1974/75	1980/81	1974/75	1980/81	1974/75	1981/82
Admission	18	17	45	42	10	-	39	43	6	10
Retention	36	37	53	51	17	17	33	39	-	15
Pass	35	36	46	48	11	10	23	21	-	13
	Master's degree									
	Punjab		Sind		NWFP		Baluchistan		Federal Area	
	1974/75	1980/81	1974/75	1980/81	1974/75	1980/81	1974/75	1980/81	1974/75	1981/82
Admission	19	29	60	60	59	58	48	70	23	73
Retention	35	54	66	63	80	81	51	68	22	95
Pass	47	50	60	58	67	71	44	56	33	63
No	36		50		22		18		20	

Sind's 51 per cent in 1980/81 being the highest. The numbers suggest practically an identical story for pass percentages.

The greatest differential in rates across level existed for NWFP, which, along with the Federal Area, had very low rates for both represented years at the Bachelor's level and over all the highest at the Master's level (for the Federal Area this is only true for 1980/81). Sind had the highest rates at the Bachelor's level. The rates do differ considerably by province which seems to suggest different policies adopted by different examination boards. One reason for these differences could be a varying pressure of social demand—for Punjab the low rates may suggest a high pressure of social demand. The differentials in NWFP by level may result from a conscious decision to cut students off at a lower level and exercise more leniency for those successfully achieving graduation. Of course, it could be that the more committed students get through at the lower levels and this is reflected in the higher average performance (as reflected by the three rates) at the more advanced level.

Table 48 shows differentials in these same rates by level and field of specialization. Some pooling of the fields was necessary because of the small number of respondents in some categories (see Annex D, Table I). Even so, agriculture (with only six cases) has been kept separate given its current importance in Pakistan.

There is not much difference in the rates of basic sciences and the humanities and social sciences. In fact, they both differ considerably from the technical and professional category and agriculture, at both levels of education represented. Over time, there has been practically no change in the rates at the Bachelor's level, except for the technical and professional level where they rose. At the Master's level, they also rose for the technical and professional fields (each rate more than doubled) and for the humanities and social sciences.

The rates at both Bachelor's and Master's levels were the highest for agriculture (in all cases over 7 per cent). As expected, the rates were considerably higher at the Master's relative to the Bachelor's level for the basic sciences and the humanities and social sciences. Surprisingly, this pattern is reversed for the technical/ professional category. Excluding agriculture (which only had six cases), all the rates at the Bachelor's level were quite low (under 30 per cent) for basic sciences and the humanities but over 60 per cent at the Master's level. For the technical and professional category, the rates were over 60 per

Table 48: Admission, retention and pass percentages by level and field of specialization

	Basic Sciences		Technical/ Professional		Agriculture		Humanities Social Sciences	
	1974/75	1980/81	1974/75	1980/81	1974/75	1980/81	1974/75	1980/81
Bachelor's degree								
Admission	28	29	36	41	71	70	21	-
Retention	31	32	51	66	91	90	25	25
Pass	21	24	53	67	78	73	21	21
Master's degree								
Admission	62	63	8	19	71	70	42	67
Retention	68	70	11	30	72	72	55	61
Pass	68	70	11	30	72	72	55	61
No.	38		24		6		77	

cent at the Bachelor's level (expected for 41 per cent admission rate) and 30 per cent or below at the Master's level.

The presentation of output statistics and the review of the admission, retention, and pass percentages in this section is essentially a descriptive exercise. However, this type of information is essential to match the development of higher education with the manpower needs of the economy described in the previous Chapter.

The next Chapter is devoted to studying the discrepancy, if any, between the perceptions of the beneficiaries of the higher education system and the services this system provides.

5.5 Concluding observations

A content analysis of the education sector in Pakistan's Five-Year Plans brings out some disappointing issues. The most striking feature that emerges from such an exercise is the large number of recurrent themes. Thus, starting with the First Plan, a large number of the same concerns and proposals are voiced. For example, there are repeated observations on high failure rates, deteriorating standards, poor research facilities in general and particularly in science, regional inequalities, and unbalanced enrolments by specialization and by sex.

Once again, there is a similarity in priorities and prescriptions. The emphasis on science for progress and on basic education for its contribution to the equality of opportunity are ubiquitous. The determination expressed in the Sixth Plan to reverse the development of an inverted education pyramid does strike a new note.

One major problem of educationists in the past has been lack of resources. In the seventies, Pakistan's educational expenditure as a percentage of the budget was the lowest (at 4.6 per cent) in the South-Asian region. The Sixth Plan's intention of raising this to 7 per cent on an annual basis is encouraging. However, even this budgetary ratio is only half of the average 1977 budgetary commitment of other developing countries.

Despite the continuing concern of educational planners, a review of the education statistics over time does indicate some positive developments. For a start, the achievement rate of targets in enrolments and institutions is quite high. Also, the per capita recurring and development expenditure per pupil, a rough proxy for quality, increased from the non-Plan to the Fifth Plan period for colleges and universities.

There is also the hope that the various higher educational research institutes and Centres of Excellence will contribute to improving quality.

Enrolment growth rates were highest for engineering and technology (almost doubling from 1974/75 to 1981/82). Even enrolment growth rate in basic sciences exceeded that of arts, which at 15 per cent was the lowest. Participation rates for higher education also rose in this period with the greatest increase being for Sind and Baluchistan, while those for NWFP and Punjab decreased. Thus the success in attaining a regional balance in enrolments was mixed.

The attempt to attain a balance in participation in higher education between males and females did not meet with complete success. The absolute differential between male and female enrolments in higher education was large and increased in the seventies due to a much higher growth in absolute enrolments for males. Perhaps another disappointing finding of this research was the magnitude by which the growth in social demand for higher education was outstripping the increase in supply.

Two of the hypotheses which formed the framework for the collection and analysis of evidence in this Chapter were: (a) there is a wide and increasing disparity in the funding and facilities of Pakistani universities, and (b) the standard of education has been declining. Evidence on the quality of educational services imparted to students (not exactly identical to the standard of education) was to form the backdrop to test an additional hypothesis of the existence of economies of scale in university expenditure (i.e. as enrolments increase the real per pupil recurring expenditure declines given a constant quality of educational services).

The more newly established universities had higher per pupil recurring and development expenditures over the period 1974/75 to 1980/81. The per pupil recurring expenditure declined in six out of the ten universities for which data were available. Development expenditure per pupil declined for all the universities. Results of regression analysis did show that the decline in per pupil expenditure due to rising enrolments over time was significant for eight out of the ten universities. So as to be able to conclude that this confirmed the existence of economies of scale, some indirect evidence on quality was given on this issue.

An important part of recurring expenditure is student-teacher ratios. Among general universities, these declined over time for the

newer universities but rose for the more established ones like Punjab, Karachi and Peshawar. For technical universities, there was a rise on average from 13 in 1977/78 to 17 in 1981/82. However, for both groups, the average ratio was still below the average of 14 for a group of upper middle income countries.

While the secondary data collected by the U.G.C., cited above, did show a satisfactory staffing position in universities, the results of a sample survey of all higher level academic institutions indicated there was room to investigate the position of individual courses. A fairly high number of courses at all higher education levels were reported to have inadequate teaching positions. Also, according to the survey respondents, the serious shortages existing in 1974/75 continued in most cases to persist in 1981/82.

The qualifications of teachers, an indirect proxy for the quality of teaching, did show a considerable improvement during the last decade. Using as the index the number of Ph.Ds as a percentage of total staff, the average increase for general universities was from 1.6 per cent in 1973/74 to 15.6 per cent in 1981/82. For technical universities the increase was from 0.2 per cent in 1977/78 to 7.8 per cent in 1981/82. By this index, the new universities did not fare as well as the more established ones, with the exception of Quaid-i-Azam University.

The analysis of transition rates revealed a small percentage decline in the output of general science and arts subjects (including social sciences) and a corresponding small percentage increase in the output of professional fields such as medicine, business administration and law. The survey results suggested a decline in the pass percentage between 1974/75 and 1980/81. For general fields the decline was from 49 to 46 per cent and for technical fields from 93 to 82 per cent. The ability of institutions to retain students at the Bachelor's level showed no change during this period except for an increase in the technical/professional field. At the Master's level, retention percentages increased considerably so that the weighted (by field of specialization) average increase was from 52 in 1974/75 to 70 in 1980/81. This could tentatively be added to factors suggesting an improvement in the education scene over the last decade.

Overall, the evidence with regard to the quality of educational services/standards is mixed. The lower pupil-teacher ratios, the improved qualifications of the teaching staff, and the constant or improved retention rates are positive indicators. However, contrary

evidence is the declining access to foreign journals in libraries and dissatisfaction with the research facilities. Perhaps, it would not be unreasonable to accept the assumption of a constant quality of educational services and conclude that the data do confirm the existence of economies of scale in university expenditure.

A very important aspect of higher education services is access to good libraries and an important feature of good libraries is the access they provide to recent journals. For the two technical universities for which data were available (Agricultural, Faisalabad and Engineering and Technology, Lahore), there was a commendable increase between 1977/78 and 1981/82 in the access their libraries provided to foreign journals. However, for most general universities, there was either no change during this period or a major decline. Furthermore, there was a large disparity in foreign journal availability between universities. Also, by using individual library books as a ratio of the total in all libraries, it was apparent that the newer universities' libraries (once again with the exception of Quaid-i-Azam, a Federal University) were insufficiently equipped.

Surprisingly, the findings from the U.G.C. secondary data were not endorsed by the results of a sample survey in that there was not a very high degree of dissatisfaction expressed by respondents with library facilities. However, the survey results did suggest a poor state of research. Although, the growth in research staff did match up with the growth in other staff (70 per cent between 1974/75 to 1980/82), respondents expressed the least satisfaction with regard to research facilities available. Also, the extent of inter-institutional co-operation in research was the lowest of any inter-institutional link. The picture regarding the disparity in access to educational resources and facilities by universities is again mixed. The newer universities do have a higher per pupil recurring and development expenditure and also lower and declining student-teacher ratios over time. However, they appear in general to have a less qualified staff and poorer library facilities. Although, it is not easy to redirect individuals to different institutions, if balance is considered desirable then a discriminatory incentive system for different faculty positions could be experimented with. Simultaneously, a more intensive foreign training programme for institutions with less qualified staff, and the tying of the participating individuals on return to the sending institutions could be attempted. For developing a balance, there is an urgent need to investigate the condition of libraries and research facilities in the newer institutions.

It is fitting to end on a note of caution that was brought to the readers' attention earlier on. This chapter essentially serves a descriptive rather than a prescriptive purpose. Thus it is necessary to refrain from arriving at the conclusion that supply of higher education facilities should increase to bridge the potential gap in social supply and demand that may result from their different growth trends. If forecasting really suggests a growing mismatch, both overall and by field of specialization, the answer to the problem depends both on economics (to provide the magnitude of trade-offs) and on the educational philosophy to be chosen by a community. Planners in Pakistan appear to have opted for a freeze on the quantitative expansion of higher education in order to provide more opportunities at the lower level. This trend is reflected in the Sixth Plan. More will be said on the central issue of mismatches in the next chapter.

THE EDUCATIONAL SYSTEM IN PAKISTAN

Age	3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24																							
Level					I				II						III									
Stage					1				2		3	4	5		6									
Compulsory																								
School type					Primary				Secondary Middle High				Higher secondary	First teach train	Technical teacher training	Vocational institutes	Agriculture institutes	Cent teach train	Universities, vocational colleges and professional schools, Post-graduate					

ANNEX B

SOME HIGHER EDUCATION RELATED INSTITUTIONS

<u>Institution</u>	<u>Year of establishment</u>
I. CENTRES OF EXCELLENCE	
Marine Biology at University of Karachi, Karachi	1974
Analytical Chemistry at University of Sind, Jamshoro	1974
Solid State Physics at University of the Punjab, Lahore	1974
Minerology at University of Baluchistan, Quetta	1974
Geology at University of Peshawar	1974
Physical Chemistry at University of Peshawar, Peshawar	1978

II. NEW RESEARCH CENTRES

Institute of Chemistry, Karachi
(Private sector)
Centre of Molecular Biology, University of the Punjab
Centre of High Energy Physics, University of the Punjab
Centre of Basic Sciences, University Grants Commission
Computer Training Centre, University Grants Commission
Centre of Social Sciences, University Grants Commission
National Institute of Genetic Engineering (under establishment)

III. AREA STUDY CENTRES

South Asian Studies, University of the Punjab	1974
European Studies, University of Karachi	1974
Central Asian Studies, University of Peshawar	1974
Far East and South East Asian Studies, University of Sind	1974
Africa, North and South America at Quaid-e-Azam	1974
Middle East and Arab Countries at University of Baluchistan	

IV. PAKISTAN STUDIES CENTRES

University of the Punjab	1974
University of Sind	1974
University of Peshawar	1974
University of Baluchistan	1974
Quaid-e-Azam University	1974

ANNEX C

HIGHER EDUCATION INSTITUTIONS IN PAKISTAN

<u>Institution</u>	<u>Year of establishment</u>
UNIVERSITIES	
Universities of the Punjab, Lahore	1882
Sind University, Jamshoro	1947
University of Peshawar, Peshawar	2950
University of Karachi, Karachi	1951
Agriculture University, Faisalabad	1961
University of Engineering and Technology, Lahore	1961
Quaid-i-Azam University, Islamabad	1965
University of Baluchistan, Quetta	1970
Allama Iqbal Open University, Islamabad	1974
Gomal University, D.I. Khan	1974
Bahauddin Zakaria University, Multan	1975
Islamia University, Bahawalpur	1975
Sind Agriculture University, Tandojam	1977
NED University of Engineering and Technology, Karachi	1977
Mehran University of Engineering and Technology, Jamshoro	1977
NWFP University of Engineering and Technology, Peshawar	1980
University of Azad Jammu and Kashmir, Muzaffarabad	1980
NWFP University of Agriculture, Peshawar	1981
Islamic University, Islamabad	1981
Agha Khan University, Karachi	1981
Women University (under consideration	

II. MEDICAL COLLEGES

Army Medical College, Abid Majid Road, Rawalpindi	1977
Allama Iqbal Medical College, Lahore	1975
Fatima Jinnah Medical College for Women, Lahore	1948
King Edward Medical College, Lahore	1860
Nishtar Medical College, Multan	1951
Punjab Medical College, Faisalabad	1973-74
Quaid-e-Azam Medical College, Bahawalpur	1971
Ayub Medical College, Khyber Medical College, Peshawar	1955
Bolan Medical College, Quetta	1972
Chandka Medical College, Larkana	1973
Dow Medical College, Karachi	1945
Nawab Shah Medical College for Girls, Nawabshah	1974
Liaquat Medical College, Jamshoro	1951
Sind Medical College, Karachi	1973
Rawalpindi Medical College, Rawalpindi	1974

III. COLLEGES OF TECHNOLOGY

Government College of Technology, Lahore
Government College of Technology, Rasul
Government College of Technology, Multan
Government College of Technology, Karachi
Government College of Technology, Hyderabad
Government College of Technology, Khairpur
Government College of Technology, Peshawar

Table D.1. Selected performance indicators by university

University	Number of research papers published		Percentage of students with PGD			Employment opportunities			Non-employment opportunities	
	1973-74	1981-82	1973-74	1977-78	1981-82	1973-74	1977-78	1981-78	1973-74	1977-78
<i>General</i>										
Punjab	19	22	2.4	2.8	38.4	0.0	34.7	56	2.5	1.9
Sind	9	10	3.4	2.6	22.2	0.0	n.a.	9	0.3(a)	0.5
Peshawar	12	13	1.2	1.0	14.6	23.2	20.6	18	10.0	9.6
Karachi	16	23	0.2	2.8	42.8	0.0	0.8	2	1.9	0.7
Quaid-e-Azam	7	6	3.2	1.9	52.9	31.2	46.8	9	12.8	12.8
Baluchistan	12	6	3.8	3.1	13.3	250.0(a)	n.a.	n.a.	3.8	2.1
Gomal	7	4	n.a.	1	7.1	n.a.	n.a.	5	1.6	2.6
Allama Iqbal	-	-	-	2.3	33.3	40.0(a)	1.0	0.8	0.8	0.8
Multan	9	8	n.a.	n.a.	15.7	n.a.	n.a.	n.a.	7.3(a)	3.8
Islamia Bahawalpur	19	7	n.a.	10.6	11.7	n.a.	n.a.	n.a.	1.0(a)	1.0
- mean	12	11	2.5	3.2	28.2	-	-	0.8	5.0	3.7
- standard deviation	8	7	1.6	2.9	15.6	-	-	-	4.2	4.4
<i>Technical</i>										
Agric Faisalabad	10	11	0.0	2.0	26.8	127.0	66.0	97	5.6	2.8
Eng. & techn. Lahore	11	14	0.6	2.5	n.a.	351.0	25.0	3	13.7	4.8
Agric Sind, Tandojam	9	11	n.a.	2.5	16.8	n.a.	n.a.	n.a.	n.a.	6.0
Eng. N.I.D., Karachi	24	29	n.a.	2.2	11.3	n.a.	n.a.	n.a.	n.a.	3.6
Eng. & techn. Mehran	13	20	n.a.	2.4	8.0	n.a.	9.0	n.a.	7.3(a)	3.8
- mean	13	17	-	2.3	16.5	-	-	-	8.9	4.2
- standard deviation	6	8	-	0.2	7.8	-	-	-	4.3	1.2

Note: (a) Data are sometimes not available for the base or terminal year indicated. In that case the next available year in the range 1973-74 to 1977-78 was chosen for the calculation.

n.a. = data not available.

Source: University Grants Commission, [3], [4].

Table D.I. (continued)

	No. of total students with scholarships		Per student real recurring expenditure		Per student real development expenditure		State university fee (excl. of exam.)		Ratio	
	1974-75	1977-76	1974-75	1980-81	1974-75	1980-81	1977-76	1981-82	1977-76	1981-82
<i>General</i>										
	5	5	1 597	1 312	199	253	51 560	37 047	42	33
Punjab	5	5	2 460	2 533	1 053	634	9 972	12 079	59	51
Sind	33	26	1 856	1 987	1 479	602	7 859	13 276	44	45
Peshawar	2	1	1 207	985	249	162	22 085	23 728	44	34
Karachi	59	29	6 396	4 478	10 563	2 802	562	693	91	87
Quaid-i-Azam	16	13	2 711	1 807	1 886	1 290	4 063	4 739	27	30
Baluchistan	26	15	1 851	4 509	6 480	4 269	1 874	1 885	40	39
Gomal	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	47	n.a.	79	n.a.
Multan	49	23	6 911(8)	3 615	16 423	4 938	7 653	3 373	26	63
Islamia Behawalpur	71	8	-	-	-	-	2 900	3 461	34	33
- mean	30	14	3 124	2 653	4 792	1 869	-	-	48.6	46.1
- standard deviation	25	10	2 233	1 386	5 935	1 891	-	-	21.55	18.65
<i>Technical</i>										
Agric. Faisalabad	27	21	1 817	2 343	1 065	481	421	1 522	100	76
Eng. & tech., Lahore	64	24	2 585	1 783	1 175	968	755	906	74	76
Agric. Sind, Jamshajam	40	37	n.a.	n.a.	n.a.	n.a.	402	228	100	100
Eng. N.I.D., Karachi	35	19	n.a.	n.a.	n.a.	n.a.	700	749	92	73
Eng. & Tech., Mehran	24	35	-	-	-	-	243	319	100	84
- mean	38	27	-	-	-	-	-	-	93.2	81.1
- standard deviations	16	8	-	-	-	-	-	-	11.27	10.96

Note: (b) 1960-70 is used as the base period for deflation. The numbers represent a three years average (i.e. including the preceding and succeeding year) to control for short-term fluctuations and extreme values. The wholesale price index was used to deflate development expenditure and the consumer price index for government employees was used to deflate recurring expenditure. See State Bank Annual Report [5], pp. 122, 126.

Table D.II. Results of the regressions testing for economies of scale

University	Dependent variable	C	Regression Co-efficients and Statistics					R	N
			$1/x^0$	$1/2x^0$	x^0	x	1		
Punjab	$Y^{0.5}$	3.208		-.46			6.43	.40	9
Sind	$Y^{0.5}$	-23.005 (2.86)			15.45 (3.32)	-.002 (3.43)	7.63	.62	9
Peshawar	$Y^{0.5}$	6.904 (3.56)			-1.99 (2.35)	.0001 (2.12)	5.09	.50	9
Karachi	$Y^{0.5}$	2.763 (3.48)		-.385 (1.93)		3.73	.34	.9	9
Quaid-i-Azam	$Y^{0.5}$	18.496			-22.56	.009	81.19	.95	9
Baluchistan	$Y^{0.5}$	4.88.6 (6.33)		-3.16 (2.88)	-22.56	.009	81.19	.95	9
Multan	$Y^{0.5}$	11.785 (10.18)			21.39 (5.53)	.013 (4.91)	17.2	.84	7
Eng. and tech. Lahore	$Y^{0.5}$	4.516		-1.37			17.08	.67	9

Table D.III Selected performance indicators by faculty

Faculties	Student/Teacher Ratios		% Staff with Ph.D		Numbers appearing for examinations		Pass percentage		% Distribution of output by field of specialisation(a)	
	1974/75	1981/82	1977/78	1981/82	1977/78	1981/82	1977/78	1981/82	1977/78	1981/82
Agriculture	11	16	2.1	21.4	967	1 632	94	78	1.8	3.1
Arts	13	12	0.9	17.3	73 906	64 960	39	34	58.8	54.0
Business Adm.	39	-	0.0	15.9	321	647	77	51	0.5	0.8
Commerce	47	40	0.0	1.5	5 856	6 126	23	27	2.7	4.0
Education	28	11	2.7	25.2	7 235	3 295	65	61	9.5	4.9
Engineering	13	19	2.0	6.7	1 908	2 058	82	77	3.2	3.8
Home Economics	2	1	0.0	0.0	447	298	66	72	0.6	0.5
Law	118	93	0.0	0.0	5 756	6 150	57	49	6.7	7.4
Medicine	8	n.a.	n.a.	n.a.	3 157	5 328	62	58	4.0	7.5
Pharmacy	34	16	3.8	30.7	68	84	71	0.5	0.1	
Science	9	11	4.9	36.4	13 398	13 053	43	44	11.6	13.9
- mean	29	23	1.6	16.1			62.9	56.5		
- standard deviation	31.3	26.7	1.7	14.0			21.4	17.2		

(a) Based on numbers passed.

n.a. = Data not available.

Source: University Grants Commission. [3], [4].

ANNEX E

Characteristics of the sample of educational institutions

The total number of institutions covered in the sample was 146. Of these, 24.7 per cent were under government control and 75.3 per cent were autonomous. Their classification by region and control is summarized in Table E.I.

Table E.I. Institutions in the sample by region and control

	Government		Autonomous		
	No.	%	No.	%	Total
Punjab	20	55.6	16	44.4	36
Sind	7	14.0	43	86.0	50
NWFP	2	9.1	20	90.9	22
Baluchistan	4	22.2	14	77.8	18
Federal	3	15.0	17	85.0	20
Total	36	24.7	110	75.3	146

Autonomous institutions have more freedom in taking academic and other decisions than those under direct government control. However, the finances and various other administrative issues of autonomous institutions situated within universities come under the jurisdiction of the Universities Grants Commission.

The distribution of institutions according to the level of education is cited in Table E.II.

More detail on the type of courses offered by the institutions is listed in Table E.III.

The distribution by field of specialization is a fairly good representation of the actual percentage distribution of enrolment of output by field of specialization as reflected by the secondary data. (See *Annex D, Table I*).

Table E.II. Institutions in the sample by education level

Level	Number
First Degree (B.A., B.Sc., B.Comm, B.E., M.B.B.S., B. Techn., etc)	47
Post Graduate (M.Ed., M.A./M.Sc., L.L.B., etc.)	102
Advanced (M.Phil, Ph.D. etc.)	48
Other	4

Table E.III. Institutions in the sample by major field of specialization offered

Type	Punjab	Sind	NWFP	Baluchistan	Federal	Total
Basic Science (Physical, Biological etc.)	2	14	7	13	4	40
Technical	10	5	-	1	4	20
Humanities and Social Sciences	17	19	10	4	10	60
Teacher education	3	2	1	-	-	6
Professional/Medical and Health	-	3	1	-	1	5
Agriculture and Forest	-	5	1	-	-	6
Law	1	1	1	-	-	3
Other	3	1	1	-	1	6
Total	36	50	22	18	20	146

ANNEX F

Scholarships

Scholarships are one item of the university budget. They are being brought into notice because this item can be directly related to the equity issue.⁷⁰ Scholarships ideally are intended to even the odds somewhat. Thus bright students from poor backgrounds can still earn higher education with scholarships. Of course, one cannot infer from secondary sources what proportion of total scholarships are drawn by students from a low socio-economic background.⁷¹ However, if the fellowships were directed at students from low socio-economic backgrounds, then data from the mid-seventies suggest worsening conditions on an equity criteria. This is because there is a decline in almost all universities of the total percent of actual recurring budget spent on scholarships over the period 1974/75 to 1977/78 (see *Appendix A, Table 1*). There is a corresponding but sharper decline in the percentage of total students who got scholarships. The striking cases in this regard are Quaid-i-Azam University (from 59 per cent to 29 per cent), Multan University (from 49 per cent to 23 per cent) and Engineering and Technology, Lahore. (from 64 per cent to 24 per cent).

⁷⁰ An indirect method of addressing the equity issue would be to compare the tax contribution of the students income groups to higher education with the direct (scholarship) and the indirect (fee minus unit costs) subsidy to these respective income groups.

⁷¹ For some evidence on this issue from the survey data see Chapter 6.

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6. The perceptions of students, graduates and employers

The main task in this research project was to analyze the mismatch between the world of higher education and the world of work. This could be studied using either the quantitative approach of manpower planning or the qualitative one that assesses whether the training in higher education is matched with that needed by employers. It is the latter approach that we have adopted. In so doing, the focus is particularly on the extent and nature of the relationship between higher education and job opportunities in corresponding areas.

Some of the specific issues analyzed in this general framework are as follows: the characteristics of students who seek particular kinds of higher education; the extent to which career guidance, placement services and promotion criteria exist and their role in establishing linkages between higher education and employment; how the graduates enter the labour market with their first regular employment; the nature and extent of mobility in the labour market, and their earnings by socio-economic background and field of specialization.

The conceptual framework adopted for this chapter is to follow the sequential flow of the students through the academic channels of Pakistan's formal higher education system into the job market. The first section describes briefly the characteristics of the achieved samples of students, employed graduates, unemployed and self-employed graduates, and the employers. This is followed by an analysis of the different phases of the above mentioned cycle, starting with admission. Next we discuss the financing of education, performance and career planning, with or without institutionalized assistance. Lastly we look at the inter-

action of higher education and the choice of occupation, the transition to the labour market, the nature and direction of occupational mobility and the variation in earnings. In each case, evidence from the various samples is drawn on and juxtaposed as appears germane to the issue at hand.

The first two sections of all the questionnaires were identical. This proved to be particularly useful in the analysis in contrasting the responses of the students and employees (graduates and post-graduates). The student group was in the academic process at or just prior to the time of the survey, while the employees had been in the academic process, on average, several years earlier. This allowed a parallel analysis of the two populations. Thus, for example, we could ascertain how the perceptions of 'students' concerning the educational scene, their socio-economic background and the provision of facilities to them changed over time. For this reason, a larger part of the chapter is devoted to an analysis of responses of these two groups.

As mentioned in Chapter 1, there are some aspects of survey research that a reader has to bear in mind. First, various errors are possible in the process of eliciting information, recording it, and preparing it for analysis. Nonetheless, large sample sizes, such as those of the student and employee group's allow a certain degree of confidence in the results. Second, there is the question of the kind of information being sought. Some of the issues like student distribution by field of specialization and sex or regional distribution are better researched with secondary data due to the complete coverage. Since we have addressed these issues in the previous chapter, they are not pursued here except where cross-tabulations provided some additional insights.

In most cases, it was not possible to successfully develop the insights provided by cross-tabulation with more sophisticated analyses such as regression or multiple classification analysis. In some cases, however, the insights from the cross-tabulations could be seen as pointers for further in-depth research with secondary data. A case in point is science education. Given the stated emphasis on science in higher education in Pakistan, special attention is devoted to it—particularly in the section on career planning.⁷²

⁷² See Muslim, January 11 1985, p.8.

A few other general points concerning the statistical analyses need to be mentioned here. First, for each tabulation, the numbers of the respondents are reported. Second, the statistics pertaining to the standard statistical significance tests of differences in proportions are not reported in each case. Other test statistics are reported. Finally, since the sample sizes are large, for at least the employees and students, establishing statistical significance between variables is almost inevitable. More attention is therefore devoted, as is advised in standard statistical textbooks, to the statistics measuring the strength of the relationship.⁷³

Analysis of survey data can produce several types of information. Prominent among these are insights which may be solely of interest to the social scientist from an academic point of view, or those that are related to control mechanisms subject to some degree of influence by planners. There is then the combination of these two. An example of the latter is an investigation of the psychological make-up of the self-employed. Although this is interesting from a purely academic viewpoint, nevertheless it could furnish planners with information to determine the right incentive structure, should it be an important goal to encourage self-employment. As much as possible, an effort has been made to concentrate on information that could be useful to planners.

6.1 Characteristics of the attained samples

The samples of students, employees, unemployed, self-employed and the employers are presented in this section to highlight their main features. Frequency tables categorizing respondents by age, sex, regional background, date of graduation, field of specialization and socio-economic background are cited. Information is also given on the distribution of employer respondents by industrial grouping.

As can be noted from Table 49, nine-tenths of the students were below 27 years of age whereas three-fourths of all employees were above it. About 50 per cent of the employees were in their thirties. While a sample of older employees might have been preferable in some respects, the large number of young professionals in the sample, with a recent educational experience, could reduce recall error. However,

⁷³ See Blalock [1], pp.291-295.

Table 49: Age distribution of sampled students and employees, in percentages

Age	Students	Employees	Self-employed	Unemployed
18-22	27	1	2	8
23-27	62	22	19	58
28-32	8	35	49	23
33-37	2	22	19	6
38-42	-	11	6	2
43-47	-	4	2	0
48-52	-	2	1	1
53-57	-	1	1	0
58-62	-	-	1	1
63-67	-	-	-	-
No.	1 536	2 618	201	260

Notes: Due to rounding, percentages do not add to one hundred. Hyphens indicate either that the category was not relevant, or that the percentage resulting was inconsequential.

there is still enough time distance between the samples for an interesting comparison. This point is reinforced in presenting their respective frequency distributions by the date of graduation (Table 50).

The detailed frequency distributions (not reported here) showed that two-thirds of the employee group graduated between 1968 and 1978. The time difference between students and graduates can be used to see how the background characteristics of students pursuing higher education have been changing. Data from the smaller samples of the unemployed and self-employed is used not for the time dimension but to provide a benchmark for later analysis.

Table 51 shows the distribution by sex within the samples. Comparison of the student and employee groups indicates that a significantly higher proportion of females in the former group sought higher

Table 50: Distribution of graduation dates within the samples, in percentages

Date	Employees	Self-employed	Unemployed
Before 1935	1	-	2
1936-1940	-	-	-
1941-1945	-	-	-
1946-1950	-	-	-
1951-1955	1	-	-
1956-1960	3	2	1
1961-1965	10	4	1
1966-1970	23	16	9
1971-1975	35	46	17
1976-1980	24	28	63
Up to 1983	3	3	7
No.	2 565	194	255

Table 51: Sex distribution within the samples, in percentages

Sex	Students	Employees	Self-employed	Unemployed
Male	74	84	86	73
Female	26	16	14	27
No.	1 536	2 595	195	242

education. This difference however could be misleading since not all women who graduate seek and attain employment. The higher percentage of female unemployed compared to the employees or self-employed is also notable.

Table 52: Regional distribution within the samples, in percentages

Domicile	Students	Employed	Self-employed	Employed
Urban	61	65	73	67
Rural	39	35	27	33
No.	1 474	2 425	186	242

Once again comparing the student and employee distributions (Table 52), it is noted that a significantly higher proportion of students were drawn from a rural domicile over the time period under study. In Table 53, the various samples were ranged according to their socio-economic background. Details on the construction of the socio-economic index are given in Annex A to this chapter.

Table 53: Socio-economic background of respondents' parents

Status	Students		Employees		Self-employed		Unemployed	
	M	F	M	F	M	F	M	F
Low	24.0	6.9	10.5	5.4	3.6	3.7	15.0	6.5
Middle	71.4	82.8	84.0	85.4	90.5	70.4	82.4	88.7
High	4.6	10.3	5.6	9.2	6.0	25.9	2.6	4.8
No.	1 138	389	2 126	404	168	27	193	62

A comparison of the student and employee groups reveals a significant increase in the proportion of male students coming into higher education from the lower socio-economic status families. For all groups, the lowest proportion of respondents among the self-employed

belonged to the lower status families while the highest proportion of females from the upper status families were in self-employment. Another striking statistic is the low percentage of male unemployed (2.6 per cent) belonging to upper socio-economic backgrounds.

As explained in Annex A, the ranking of socio-economic background entailed a high degree of aggregation. This had both positive and negative aspects to it. On the positive side is the economy in exposition and ease of analysis. Also, the index is sensitive to changes in the upper and lower categories—due to the large lumping in the centre—and this may be of more interest to planners and social analysts. On the negative side is the potential loss of detail, as is true for all aggregations. To make up for this shortcoming, separate tables of respondents by income and education are presented below and used further on in the report where they would appear to provide interesting findings.

Table 54 shows interesting differences that are hidden in the aggregation in the previous table. Students are the group for which the largest percentage of males were drawn from the lowest income category. Comparing the number (37.6 per cent) with the corresponding one for the employee group (14.3 per cent) shows a significant increase in students being drawn into higher education from the lower income category. This seems to be true for females as well. The other high number in the lower income category was for female unemployed; 36.7 per cent of female unemployed had parents in the lowest income bracket. Their unemployment could be explained by the double disadvantage of being female and from a poor-background. This argument is reinforced by the observation that the lowest number in the row corresponding to the lowest income category is female employees. By the same token, one of the larger numbers corresponding to the high income row is female employees (42.9 per cent).

Almost three-fifths of the female self-employed and over half the male self-employed had parents in the upper income brackets. This may show that many self-employed rely on their parents to provide the high initial cost of establishing self-employment. Alternatively, it may show that they join the well-established business of their parents. The high percentage of male unemployed with parents in the upper income bracket (34.6 per cent) is perhaps a surprise. It could be showing, however, the ability of the youths in this category to afford a period of unemployment until a preferred career track is found.

Table 54: Income of respondent's parents, in percentages

Income	Students		Employees		Self-employed		Unemployed	
	M	I	M	I	M	I	M	I
Low (below Rs.7,200/a)	37.6	18.9	14.3	7.4	8.1	12.5	20.3	36.7
Middle (Rs.7201-30,000)	47.9	57.0	51.4	49.7	39.5	29.2	45.1	46.7
High (over Rs.30,000)	14.5	24.1	34.3	42.9	52.3	58.3	34.6	16.7
No.	1 122	365	2 066	378	172	24	180	73

(a) This classification into groups is based on the 1979 Household Income and Expenditure Survey [3], p. XXVII. For further details see Annex A.

The increase in students of the lower income group is matched by a decline in percentages from the upper income category. The middle income category in this respect has stable percentages and, except for the self-employed, has associated with it the bulk of those entering the higher education system.

The latest Household Income and Expenditure Survey for Pakistan found 23.7 per cent of households belonging to the lower income category, 69.7 per cent to the middle and 6.8 per cent to the upper (see citation Table 54). Thus, apart from male students, the lower income category is under-represented in higher education without exception while the upper income category is overwhelmingly over-represented.

Table 55: Educational level of respondents' parents, in percentages

Educational Level	Students		Employees		Self-employed		Unemployed	
	M	F	M	F	M	F	M	F
Low	41.7	9.7	42.9	11.1	37.1	19.2	32.3	14.5
Middle	45.3	58.2	49.4	72.3	55.1	46.2	59.9	69.4
High	13.0	32.1	7.7	16.6	7.8	34.6	7.8	16.1
No.	1128	392	2164	404	167	26	192	62

Interesting detail was also forthcoming from examining the educational background of respondents' parents separately. Among employees, the bulk of females in higher education were drawn from families with a middle level of education. This appears to have changed over time since in the student group the frequency distribution shows a significantly larger proportion of females entering higher education from highly educated families. In fact, for all groups, a much larger percentage of females than males from the highly educated background category were entering higher education. The reverse was true for the low education background category for all groups. Thus, not surpris-

ingly, it is the highly educated who encourage higher education among their female offspring.

The largest percentage of females with highly educated parents are in the self-employed group (34.6 per cent). It may be that females who have completed higher education, but who do not find suitable employment, are encouraged by highly educated parents into establishing self-employment. Alternatively, the strong will and independence that motivated such females into defying norms of early marriage might also have been instrumental in persuading parents into allowing and aiding them in pursuing self-employment.

Apart from the respondents' background characteristics, also of interest is the field of (academic) specialization they opted for. A more accurate assessment of this for the seventies students can be gauged from the secondary data cited in Table 35 of Chapter 5. However, secondary data, although comprehensive, do not show the distribution by fields of specialization for the different groups sampled in this survey. These fields of specialization frequency distributions are presented in Table 56.

This table shows a remarkable and highly significant difference in diversification of the potential skill base resulting from the choices of students compared to those of the employees. Humanities, social sciences and general sciences accounted for all the listed field categories for employees, whereas these same categories account for under two-fifths of the cited fields for male students and even less for female students. This process of diversification was evident for both sexes. Mainly teaching, health and medicine appear to have taken female students away from humanities and social sciences whereas the corresponding movement of male students was spread across almost all the listed specializations.

The lack of diversification of the unemployed could be an important explanatory factor of their predicament. The same lack of diversification is also evident for the self-employed. Their lack of specialization could be due to a decision early in higher studies not to seek service. Interestingly, only among the self-employed are there more females than males specializing in basic sciences. Fields of specialization will be related to major industry divisions or occupational classifications later in this chapter, basing part of the analysis on the responses of employers.

Table 56: Respondents' major fields of specialization, by sex

Fields	Students		Employees		Self-employed		Unemployed	
	M	F	M	F	M	F	M	F
Basic Sciences	36	18	40	24	30	33	14	-
Engineering and technology	8	-	-	-	-	-	-	-
Agriculture	7	1	-	-	-	-	-	-
Humanities and social sciences	21	28	59	76	70	67	84	-
Teaching	7	23	-	-	-	-	1	-
Health and medical	19	28	-	-	-	-	-	-
Law	1	2	-	-	-	-	-	-
No.	339	155	1527	303	162	46	122	-

The sample of employers was disappointing due to the extent of non-response both on individual questions as well as overall. The extent of missing data resulted in a less rich analysis plan than could have been attempted otherwise. For example, many of the background variables, such as the size and type of firms, their date of establishment, and the type of control (public vs. private), could have provided useful classifying dimensions in multivariate analysis. Table 57 gives a profile of the type of establishments that were included in the sample. In terms of the sectoral percentage share of GNP, the manufacturing sector is over-represented in the sample, whereas the agriculture sector is grossly under-represented. However, since the emphasis was on sampling establishments, this result could be expected.⁷⁴

The distribution of public and private sector firms was roughly even at 45 and 44 per cent respectively, and the remaining 11 per cent came under mixed ownership. The main purpose in analyzing the employers' questionnaires for this study was to compare their responses with those of the students on the same issues to obtain alternative perspectives. These include responses on their method of recruitment, supply of in-service training and the emphasis on the relative importance of pecuniary and non-pecuniary job benefits. The employers' responses are contrasted to the students experience of the job market, their demand for in-service training and their ranking of job benefits. Fortunately, the response rate on these categories of questions in the employers' questionnaires was fairly good. Most of this analysis was conducted according to the type of sector the firm belonged to, i.e. public, private, or mixed. This is a dimension on which some direct control by planners is possible.

These issues are addressed from section 6.6 onwards. For now, the readers attention is directed to the stages of the academic cycle which are the subject matter up to section 6.5.

⁷⁴ See Pakistan [4], pp.12-13.

Table 57: Distribution of enterprises in the sample by industrial grouping

Industry Division	Percentage
Agriculture, hunting, forestry, fishing, etc.	4
Mining and quarrying	1
Manufacturing	44
Electricity, gas and water	4
Wholesale, retail trade, hotels, etc.	6
Construction	4
Transport, storage and communications	5
Financing, insurance, real estate business	7
Community, social and personal services	25
No.	289

6.2 Demand for higher education, choice of subject and determinants of non-admission

In this section, a slightly different pattern of analysis is adopted for the smaller samples of the unemployed and self employed graduates than for the larger samples of the employees and students. The reason is that additional information was available, at least on the demand for education and choice of subject, from the data on the unemployed and self-employed. Thus, after presenting the salient points from the smaller samples on these issues, the pattern of comparing the student

and employee samples established in section 6.1 is resumed to benefit from the comparison over time this allows. The unemployed or self-employed are included in these comparisons whenever some information results from so doing. This procedure is pursued throughout the rest of this chapter.

In explaining the choice of a subject or the reasons for non-admission, both a content analysis of the respondents own perceptions as well as the more objective information about the respondents background, available from the questionnaire, has been utilized. This technique of juxtaposing the subjective and 'objective' factors has also been utilized in other contexts in the study.

6.2.1 Demand for higher education

Respondents were asked to rank their reasons for pursuing higher education. The ranking list was not exhaustive but does seem to have covered the important possible motivations. Ranking was from 1 to 3, with 1 being the most important. This scale was reversed—assuming that conventional scaling would make grasping the exposition easier—so that 3 reads as most important. The responses were then averaged, with the ranks being the weights, and the results are presented in Table 58.

The differences in weights, given to the various reasons, between the unemployed and self-employed are striking. The self-employed attached least importance to studying because of the availability of a scholarship or grant. The unemployed attached the most importance to it. Perhaps higher studies was being used as a means to postpone unemployment by those who did not anticipate success in the job market. The low ranking of studying to meet the needs of a particular career or to further job prospects would partly explain such an anticipation. However, the ranking pattern of the unemployed does indicate that they bear some responsibility for their predicament. Interestingly, studying for its own sake was ranked second by both groups of respondents.

Table 58: Ranking of reasons for pursuing higher education

	Unemployed		Self-employed	
	Average Ranking	No.	Average Ranking	No.
Meeting needs of a specific future career	1.36	(237)	2.78	(197)
Scholarship/grant Incentive	2.45	(224)	1.69	(168)
Study for its own sake	1.86	(231)	2.30	(172)
Better employment opportunities	1.25	(264)	2.14	(176)

6.2.2 Choice of subject

The unemployed and self-employed groups were also asked to rank reasons for their choices of particular subjects out of various listed ones. These rankings are presented in Table 59. The lowest weight given by the unemployed to the possibility of satisfying future career needs in their choice of subject is consistent with their low ranking of this reason in their motivation for pursuing higher education in general. Unfortunately, since the various listed reasons are not mutually exclusive, some contradiction in the ranking of responses results. Thus, while the needs of the future career have been ranked low, the market value of the course is ranked second highest. However, Table 58 also shows an emphasis on personal preferences rather than career needs among the unemployed.

The responses of the self-employed are surprising. The maximum possible weight is attached to all the cited reasons. This could reflect what is popularly referred to as the general enthusiasm of the self-employed. However, it is puzzling that these weights are much higher

Table 59: Ranking of reasons for choosing a particular subject

Reasons	Unemployed		Self-employed	
	Average Ranking	No.	Average Ranking	No.
Possibility of satisfying career needs	1.73	(219)	2.98	(104)
Possibility of satisfying personal interest	1.92	(224)	2.98	(91)
Course content	2.24	(92)	3	(11)
Market value	2.11	(201)	3	(51)
Prestige	-	-	3	(101)

Note: 3 is the highest possible rank and 1 the lowest

and the response rates lower than those on a similar question, the answers to which are summarized in Table 58.

Other than the direct responses tabulated above, it was also possible to relate sex, regional background, performance, and socio-economic status to the choice of subject at the under-graduate level. Since increasing emphasis is being placed on science in Pakistan,⁷⁵ it is useful to know the characteristics of those opting for science and whether any change has been occurring over time in this regard.⁷⁶ The

⁷⁵ Science subjects unless otherwise specified include both basic sciences as well as engineering and technology.

⁷⁶ See Muslim, January 12 1985, p.8.

cross-tabulations below address these issues.

As can be noted from Table 60, a significantly higher percentage of science specializations among students—compared with employees—are women. However, the percentage (20 per cent) is still less than one-fourth, which represents the percentage of total women in the student sample.⁷⁷ A similar tabulation is presented for the student's regional background (Table 61).

Table 60: Choice of science subjects by sex, in percentages

<u>Sex</u>	<u>Students</u>	<u>Employees</u>
Female	20 (26)	11 (16)
Male	80 (74)	89 (84)
No.	389	739

Note: Parentheses show the percentage distribution by sex in the sample.

The increase in the number of science students from a rural domicile exactly corresponds with the increase in the number of students being drawn into higher education as a whole from a rural domicile—when comparing the samples of employees and students. Thus, it seems that regional background does not play an important role in explaining the choice of science subjects.

⁷⁷ According to University Grants Commission data, 19 per cent of total science students for all levels were females in 1981/82. See Pakistan [5], pp.39-40.

Table 61: Choice of science subjects by region, in percentages

Region	Students	Employees
Urban	62 (61)	69 (65)
Rural	38 (39)	31 (35)
No.	375	678

Note: Parentheses show the percentage distribution by domicile in the samples.

There was, however, a highly significant relationship between performance in matriculation and the opting for a science programme in graduate or post-graduate studies, as Table 62 indicates.

A significantly higher percentage of first divisioners and a significantly lower percentage of third divisioners are opting for science subjects among the student group. This can be viewed as a positive development.

Socio-economic background of the respondents could have been playing an important role in the choice of subject. The cross-tabulations however did not confirm this contention. With parents income and education pooled, socio-economic status exercised an insignificant influence on choice of subject in all cases except for students. However, even there the relationship was weak.⁷⁸ Except for the unemployed, parents separately did exercise a significant influence, but a

⁷⁸ The strength of the relation is gauged from the use of the Cramer's V statistic in this case. Cramer's has been used in this way for ordinal variables throughout the report. See Nie (SPSS) [2], p 224, or Blalock [1] for details.

Table 62: **Opting for science in higher education by performance in matric, in percentages**

<u>Results</u>	<u>Students</u>	<u>Employees</u>
1st Division	61	34
2nd Division	38	24
3rd Division	6	19
No.	384	721

weak one. Despite these weak and insignificant results, Table 63 showing choice of subject by socio-economic background is presented for the interesting patterns it reveals.

Table 63: **Choice of subject by socio-economic status, in percentages**

<u>Status</u>	<u>Students</u>		<u>Employees</u>		<u>Self-employed</u>		<u>Un-employed</u>	
Low	15.4	(19.6)	18.2	(13.3)	3.6	(3.6)	20.0	(13.2)
Middle	80.0	(74.3)	78.8	(74.1)	92.9	(87.7)	78.6	(83.7)
High	4.6	(6.1)	3.0	(12.6)	3.6	(8.7)	1.4	(3.1)
No.	1019		1542		195		257	

Note: Percentages in parentheses represent the percentage distribution by socio-economic status in the various samples.

For all groups, the percentage opting for science in the upper socio-economic category is less than their respective representation in the samples. Interestingly, except for the unemployed, the reverse is true for the middle income group. For both the employees and the unemployed, the percentages opting for science in the low status class are greater than their respective representations in the population. Perhaps, the unemployed science candidates from lower status families are the ones who were unsuccessful in qualifying for the medical and engineering professions. The decline in the proportion of students from the lower status background opting for science, relative both to their representation in the sample as well as to the employee group, is not encouraging.

6.2.3 Non-admission and its causes

In this sub-section, the incidence of non-admission is first presented followed by the causes for this phenomenon. To determine the latter, the perceptions of the employees and also more objective information contained in the questionnaire responses is drawn upon. Table 64 shows the incidence of non-admission.

For both employees and students, admission to the Master's programme was least restrictive for those who did well in the Bachelor's programme. One may also cautiously infer that admission over time was becoming more restrictive.⁷⁹ Alternatively, the standard of students seeking admission may have fallen over time given no change in admissions policy and marking standards. It is possible that over time greater numbers were seeking admission in the then existing institutions, causing a greater number to be denied their first preference.⁸⁰

A content analysis of the respondents' own perceptions of why they were unable to seek admission is given in Table 65.⁸¹

⁷⁹ This is not entirely consistent with the institutional responses reported in Chapter 3, Table 10.

⁸⁰ Enrolment growth rates over the last eight years were indeed very high. See Chapter 5, Table 34.

⁸¹ The response rate for the unemployed and self-employed groups was too low for meaningful reporting.

Table 64: Incidence of non-admission to the field of choice in percentages

Level	Students	No.	Employees	No.	Self-employed	No.	Un-employed	No.
Intermediate	24	(1 465)	11	(2 440)	10	(189)	16	(231)
Bachelor's	6	(1 902)	6	(1 902)	9	(149)	15	(191)
Master's	35	(110)	22	(369)	-	-	-	-

Table 65: Respondents' perceptions of reasons for non-admission by degree

	Students			Employees		
	1st	2nd	3rd	1st	2nd	3rd
Low marks	72	64	-	50	33	29
Quota system	13	8	-	6	15	5
Low Socio-economic status	10	5	-	25	11	29
Family constraints	6	3	-	5	9	14
Lack of institutional facilities	-	13	-	9	20	19
Over age	-	8	-	4	7	5
Problems with English	-	-	-	-	4	-
Other	-	-	-	-	1	-
No.	358	39	-	248	53	21

Note: The first degree represents the intermediate level, the second Bachelor's, and the third Master's.

Low marks were perceived as the most important reason of non-admission for both employees and students at each degree level. That the educational system continues to impart such a perception to students is important for minimizing frustration. At each degree level, a significantly higher percentage of students attributed non-admission to low marks than did employees.

Another important reason for non-admission was the low socio-economic status of the family. This, however, was significantly less important at each degree level for students in contrast to employees. Family constraints similarly declined in importance. It appears, therefore, that the demand side constraint towards seeking admission was becoming less important over time.

The supply side picture emerging from these numbers is mixed and uncertain. At the first two degree levels, fewer students than employees rate the lack of institutional facilities as an important reason. At the first degree level, a larger number of students than employees perceived provincial quotas to be a problem whereas a smaller number did at the second degree level. The differences, however, were not significant.

The above subjective evaluation of non-admission was complemented by other information reported in the questionnaires. Thus checks via cross-tabulations were made to see if successful admission to one's area of choice was related to respondent's regional background, sex, performance in the matriculation examination or their socio-economic status.

No evidence of any systematic relationship between regional background and successful admission at the various levels of higher education was evident for any of the groups. The relationship between sex and success at admission was significant in more cases. However, in most cases the percentage by sex unable to get admission closely mirrored the sex distribution in the sample. One notable exception was admission at post-graduate level for the student group. Fifty four per cent of those unable to get admission were females whereas only a quarter of the student sample constituted females.

Considering the two larger samples, relationship between performance in matriculation and non-admission was surprisingly insignificant. However, as one may expect, those with first divisions in matriculation experienced the fewest cases of non-admission. For all levels, between the employee and student groups, there was a significant difference in non-admission by performance. The non-admission faced by first divisioners varied between 4 and 14 per cent for the two groups respectively. For second divisioners it varied between 40 and 46 per cent and for third division between 41 and 55 per cent. There is not as much difference between the non-admission experience of second and third divisioners as one may expect or want.

The relationship between the income group of parents and success in earning admission at most degree levels was insignificant for all groups except for the students. However, even there the relationship was weak. The educational background of parents was a statistically insignificant determinant of admission for all groups. For the student and employee groups, adequate data were available to show the magnitude of non-admission by the socio-economic background of respondents' parents (see Table 66).

Among students from lower status families, the incidence of non-admission, particularly at the Master's level was much lower than their proportionate representation in the sample. Thus, students from lower status families were quite successful in earning admission. This situation appears to have improved for such students over time since the corresponding comparisons for the employee group from lower status, families does not indicate such success. For employees, it is the respondents from the upper income groups whose lack of success in attaining admission at the advanced level (1 per cent) was much lower than the corresponding representation of this sub-group in the sample (9 per cent).

The success of the rich could be attributed to good performance due to a complicated mix of environment and ability. Alternatively, it could be due to influence. Similarly, among the students, the poor may be favoured in admissions policy or they may be performing better. This would not suggest that the poor on average perform better, but rather, that those among them who do reach the higher education level are more motivated and industrious. The extent to which performance is an explanatory factor is explored in section 6.4.

Table 66: Non-admission by level and parents' socio-economic background, in percentages

<u>Level</u>	<u>Students</u>			
	<u>Lower</u>	<u>Middle</u>	<u>Upper</u>	<u>No.</u>
Bachelor's level	11 (20)	84 (74)	5 (6)	350
Master's level	3 (21)	95 (72)	2 (7)	62
Advanced level	- (86)	97 (9)	3	37
	<u>Employees</u>			
Bachelor's level	7 (10)	89 (84)	4 (6)	264
Master's level	7 (10)	89 (83)	4 (7)	102
Advanced level	10 (9)	89 (82)	1 (9)	79

Note: Parentheses show the representation of the various income groups in the sample.

6.3 Financing of education

For some students, attaining admission is not the end to their problems. Their next concern is financing the education. As it turns out, in Pakistan, probably like in many other developing countries, this is not so serious a problem for the relatively prosperous. This is partly so because education is heavily subsidized, and largely because in the majority of cases the student's parents or family shoulder the financing burden. Table 67 shows the extent to which this is true.

Table 67: Ranking of the importance of various sources of financing

Sources	Students	Employees	Self-employed	Un-employed
Parents	2.9 (1 464)	2.9 (2 407)	2.9 (186)	2.9 (240)
Relatives	1.4 (1 556)	1.3 (992)	1.5 (85)	1.5 (125)
Government scholarships	1.7 (636)	1.5 (1 261)	1.7 (35)	2.0 (79)
Scholarships from community	1.3 (249)	1.7 (745)	1.0 (9)	1.8 (30)
Self-supporting	1.6 (643)	1.7 (1 291)	1.8 (111)	1.8 (128)

Note: The number of responses for which ranking have been averaged are in parentheses. Most important was represented by 3 and least important by 1.

Respondents cited more than one source of financing but parents were universally the most important source. The pattern of ranking by the different sources was very similar for all the groups. Surprisingly, only the unemployed ranked government and community scholarships as being moderately important. This ties in with the ranking by the unemployed of scholarship/grant assistance as the most important motivation for pursuing higher education.

One may expect science students to rely more on fellowships, given the earlier stated emphasis on science. Table 68 gives answers to this speculation using the two larger data sets.

Table 68: Ranking of government fellowship in financing education by field of specialization and level

	<u>Students</u>		<u>Employees</u>	
	<u>Science</u>	<u>Other</u>	<u>Science</u>	<u>Other</u>
Bachelor's level	1.7 (119)	1.8 (220)	2.3 (38)	2.2 (65)
Master's level	1.7 (87)	1.8 (102)	2.3 (31)	2.2 (35)

Note: 3 represents most important and 1 the least

There appears to be no preference for science candidates at either level in the allocation of fellowships. Within the science category, many more of the respondents in absolute terms were from physical science rather than the engineering and technology specialization. Although employees attached more importance to scholarships as a source of financing than students, proportionately more students relied to some degree on fellowships. This is evident from the larger number of student responses. Judging from this data, more fellowships appear to have become available at the higher level over time. Financing of

education does not appear to be a serious problem. However, maintaining an adequate performance is certainly a more ubiquitous problem.

6.4 Educational experience

Performance and the level of educational attainment are discussed in this section. Once again, the bearing that regional background, sex and socio-economic background have on these variables is analyzed.

6.4.1 Performance

Performance was coded to vary from five to fifteen, with five representing third divisions at five levels of education and fifteen representing all first divisions with standardizing adjustments for those who did not reach the advanced levels. There was no strong systematic relationship between regional background and performance for the two larger samples. Put differently, knowing respondents' regional background did not significantly increase the ability to predict their performance.

There was, however, an interesting pattern in the performance variable. For both the employee and student groups, there was a predominance of respondents from urban backgrounds earning first or third divisions. However, the middle performance region (from nine to twelve), contained a significantly higher percentage of respondents with rural domiciles. This was much more the case for the student group, showing that over time the tendency for rural domiciled students to come up with a mediocre performance is increasing. One could infer that the gap between urban and rural background preparation for higher education is not decreasing.

Performance was not significantly associated to regional background for the self-employed group. The distribution across the three performance levels for the rural areas was even, whereas there was a proportionately greater number of middle level performers among the urban-based self-employed.

A very significant and fairly strong negative relationship emerged

between performance and regional background for the unemployed.⁸² This was interesting enough to report separately.

Table 69: Performance by regional background among the unemployed, in percentages

	Rural	Urban
Poor	.10	.24
Satisfactory	.28	.32
Good	.62	.44
No.	81	162

Note: As earlier indicated, performance codes vary from 5-15: poor is represented by 5-9, satisfactory by 10-12 and good by 13-15.

For respondents of both rural and urban origin, there is a linear trend in the proportions towards better performance—much more dramatically so for the rural areas. In fact, the additional surprise is that the proportion of good performance from rural areas among the unemployed (62 per cent) is considerably higher than that for the other groups. These are 44 per cent for the self-employed, 37 per cent for the employees and 47 per cent for the students. One explanation is that the very able from regional backgrounds acquire higher education but this ability is not adequate in preventing them from being disadvantaged on the job market.

Sex of the students or employees was not systematically related to performance. Cross-tabulations of performance with income and education of parents showed the relationship in almost all cases to be significant but weak.

Performance in matriculation was significantly and strongly related to overall performance. Knowing student performance in the matriculation examination increased the ability to predict their future perform-

⁸² Gamma was -.34. This interpretation of gamma has been used throughout the study for the ordinal level variables. See Nie (SPSS) [2], p 228.

ance by 12 per cent.⁸³ This lends support to basing admissions policy on grades at earlier levels of education.

Coding the performance variable on an interval scale allowed the use of regression analysis to ascertain the significance and magnitude of the impact that various background and other variables have in explaining performance. The outcome of a series of step-wise regressions is reported in Table 70. (For a complete list of variables, see Annex B, Table I).

Provinces are the first set of variables explaining differences in performances. A reasonable interpretation here appears to be that there are systematic differences in standards of examination boards across the different provinces.

The parents' educational backgrounds were influential in explaining the children's performance. The negative signs on the dummy variables for the father's educational level indicate, as expected, that the educational level of the father is positively and significantly associated with the children's educational performance for all groups. The mother's educational level showed up as less important, except in the case of students where the low educational category has the expected sign. For the employees and the self-employed, the signs on the middle educational category appear surprising. The middle educational level for the mother, especially for the self-employed, showed up as more important than the higher level in explaining the children's performance.

Science students performed better than non-science students. Finally, sex was significant as an explanatory factor only among the unemployed. In this case, the academic performance of females was significantly better than that of males.

⁸³ This is based on the lamda statistics of 0.12. See Nie (SPSS) [2], p 225. However, this contradicts the findings of Pasha et al., [6].

Table 70: Regression results identifying the determinants of performance

Variables(a)	Students	Employees	Self-employed	Un-employed
Constant	13.9384	12.7142	13.2307	14.5472
<i>Provincial Dummies</i>				
Federal Area		.2338*	-.7644*	-1.3260
		(1.37)	1.54)	(4.20)
Punjab		-.6251	-.7649	-1.9706
		(3.63)	(2.12)	(7.96)
Sind		-.6292	-1.7784	-1.5617
		(3.52)	(4.04)	(4.63)
NWFP		-.1668*		
		(.87)		
<i>Mother's Educational Level</i>				
Low	-.1915			
	(2.03)			
Medium		.2010	.8125	
		(2.11)	(2.27)	
<i>Father's Educational level</i>				
Low		-.6186	-.3542*	-.5262
		(5.48)	(1.09)	(2.24)
Middle	-.1692	-.3558		
	(1.95)	(3.70)		
<i>Science Specialization</i>	.4302	-.3419		.5880
	(4.86)	(4.42)		(2.68)
<i>Male Sex</i>		.15941*	.7324*	-.5476
		(1.48)	(1.37)	(2.09)
<i>Rural Domicile</i>		-.1769*		
	(1.91)			
R ²	.04	.10		.33
No.	861	1998		208

(a) Federal Area, higher educational level for fathers and mothers, non-science specialization, females and urban domicile are the excluded categories.

* Not significant at p .05 level

Note: Parentheses show t- values.

6.4.2 Levels of educational attainment

Regional background or sex were not significant explanatory factors for the level of educational attainment on an aggregate level for all Pakistan. On disaggregating by province, we found significant and fairly strong relationships in some cases among these variables.⁶⁴

For Sind, and in particular NWFP, domicile (rural or urban) was related with the level of educational attainment. For NWFP, the ability to predict the level of educational attainment improved on the margin by about 6 per cent on knowing the student's domicile. These relationships were not evident for employees.

Knowing a student's sex could help in predicting their likely level of educational attainment in the Punjab and, less so, for the NWFP. The improvement in the marginal ability to predict the level of educational attainment by knowing the sex in the Punjab was about 11 per cent. This relationship was once again significant in the Punjab for employees, but not for any other province.

In the relationship between the level of educational attainment and regional background and sex, the differences among the provinces were striking; these have been reported in the tables below.

Table 71 shows that higher education draws a much larger number of students from urban domiciles. This phenomenon, however, may be on the decline since in almost all cases a higher proportion of students were drawn into higher education from a rural background than was true for employees. This is most strikingly the case for the NWFP, which is also the only province for which the percentage of students from a rural domicile far exceeds those from an urban one. NWFP is also the province for which the sex distribution in higher educational attainment is the most excessively disproportionate when compared to the sex distribution in the sample. Table 72 illustrates this point.

⁶⁴ The student and employee groups were once again compared to introduce the time dimension. Although, it is true that individual students may not have finished their academic careers among the student groups, the comparison of one educational situation with the other at different moments in time is still valid since a similar sampling frame was utilized in both cases.

Table 71 Levels of educational attainment by province and regional background, in percentages

Province	Employees								
	Graduate			Post-Graduate			Advanced		
	Rural	Urban	No.	Rural	Urban	No.	Rural	Urban	No.
Punjab	21	79	(220)	24	76	(541)	30	70	(122)
Sind	19	81	(109)	17	83	(426)	32	68	(85)
NWFP	78	22	(40)	71	29	(429)	65	35	(51)
Baluchistan	48	52	(40)	30	70	(111)	22	78	(27)
Federal Area	31	69	(16)	45	55	(96)	41	59	(22)
Province	Students								
	Rural	Urban	No.	Rural	Urban	No.	Rural	Urban	No.
	Rural	Urban	No.	Rural	Urban	No.	Rural	Urban	No.
Punjab	32	68	(315)	28	72	(290)	33	67	(21)
Sind	30	70	(308)	43	57	(112)	-	-	-
NWFP	94	6	(117)	74	25	(43)	-	-	-
Baluchistan	31	69	(93)	-	-	-	-	-	-
Federal Area	-	-	-	29	71	(52)	-	-	-

Note: For No., <15 percentages are not reported

Table 72: Levels of educational attainment by province and sex, in percentages

Province	Employees								
	Graduate			Post-graduate			Advanced		
	M	F	No.	M	F	No.	M	F	No.
Punjab	90	10	(227)	66	34	(578)	72	28	(133)
Sind	94	6	(116)	88	12	(466)	82	18	(95)
NWFP	100	0	(44)	98	2	(452)	100	0	(59)
Baluchistan	95	5	(41)	82	18	(175)	84	16	(31)
Federal Area	-	-	-	82	18	(103)	88	12	(25)
Province	Students								
	Graduate			Post-graduate			Advanced		
	M	F	No.	M	F	No.	M	F	No.
Punjab	81	19	(319)	68	32	(297)	76	24	(21)
Sind	67	33	(321)	57	43	(116)	-	-	-
NWFP	97	13	(117)	84	16	(44)	-	-	-
Baluchistan	80	20	(97)	-	-	-	-	-	-
Federal Area	-	-	-	79	21	(61)	-	-	-

Note: For No. < 15 percentages are not reported.

The table shows that NWFP had not only the lowest portion of female students in higher education, but that over time, this situation deteriorated. The other provinces showed either a constant or significantly increasing proportion of female students attaining higher education. Both the above tables have raised issues that can be more thoroughly explored with secondary data. Once again, however, the influence of the educational attainment of the parents on that of the children cannot be gleaned from secondary data and it is to this that attention is now directed.

Since the samples consist of those who have attained higher education, the search is more limited than a general investigation of the correlation between the educational attainment of parents and children. This exercise would have to be based on data of the groups collected from a random sampling of households rather than a direct sample of the groups.

In the student and employee groups, the association of parents' socio-economic background was a significant explanatory variable of the level of academic attainment but the relationship was weak. For the self-employed, this relationship proved to be quite strong. Parents' level of education, separately, was positively associated with the level of the children's education. For the unemployed, neither the educational level of the parents nor their socio-economic status in general appears to have much influence on their educational attainment.

Two interesting issues were how representative educational attainment at the higher levels was of the socio-economic category distributions in the various samples, and if there were significant differences across the samples in this regard. Table 73 illustrates this point.

Among the student group the percentage acquiring post-graduate and advanced level education from the lower socio-economic category was significantly lower than the percentage of students drawn in the sample from the lower socio-economic category, and the reverse was true for the upper socio-economic background students. Those from poorer backgrounds are less likely to be able to afford the opportunity cost of pursuing higher education, so this result is not unexpected.

The other notable pattern relates to the self-employed group. In this case, the situation is reversed. The percentage who earned advanced level education among those from the lower status category was greater than the percentage of lower-status background self-employed in the sample and vice versa. Self-employed from the upper

Table 73: Higher levels of educational attainment by socio economic background, in percentages

Status	Students			
Level	Low	Middle	High	No.
Post-graduate	13.1	79.4	7.5	530
Advanced	13.2 (19.8)	73.7 (74.0)	13.2 (6.2)	380
Employees				
Post-graduate	10.0	84.4	5.6	1742
Advanced	7.7 (9.7)	84.9 (84.1)	7.4 (6.2)	337
Self-employed				
Post-graduate	2.8	91.5	5.6	142
Advanced	7.7 (3.1)	88.5 (88.0)	3.8 (8.9)	26
Unemployed				
Post-graduate	13.3	83.3	3.3	210
Advanced	11.5 (13.4)	88.5 (83.5)	- (3.1)	26

Note: Parentheses contain the distribution of respondents' socio-economic backgrounds in the various samples.

status background could have been established in business, either separately or jointly with the family, making the higher levels of education irrelevant. This opportunity is obviously not afforded to those from the poorer social strata. Nonetheless, the self-employed are reputed to be energetic and persevering and this may explain why 8 per cent of the lower status background self-employed attained advanced education whereas only 3 per cent of the self-employed were drawn from the lower socio-economic strata.

Probably the most pressing concern of students pursuing higher education is whether a job will be attained at the termination of their studies and if so, of what kind. The next section is devoted to examining the assistance that they seek and that which is forthcoming in the process of choosing a career.

6.5 Career planning

Career planning generally begins for most at a very early age. This tendency is confirmed by the various samples shown in Table 74. Seventy per cent of employees and 78 per cent of the students had already decided upon their career paths before they reached the first degree level. In contrast, only 50 per cent of the unemployed had done so.⁶⁵ For the self-employed, the more important question was at which stage they first thought of self-employment. It appears that self-employment as a conscious decision occurs late in the academic cycle. Only 37 per cent had decided on self-employment before reaching the first degree level. Judging from Table 74, a change of heart occurs at a later stage.

Of course, career planning can be viewed as more than passing fancies if attempts are actually made to realize career goals. To ascertain this, the relationship between the employees planned occupation was related to their first actual occupation. This relationship proved to be highly significant and quite strong. Also, the probability of accurately predicting present employment, given a knowledge of the career

⁶⁵ This section concentrates on the student and employee groups because of the larger samples and the time difference in their responses and on the unemployed because their experience should be of particular interest to planners.

Table 74: Distribution of first stage of career planning

Educational level	Students	Employees	Self employed	Un- employed
Elementary	9	11	25	15
Secondary	37	36	18	15
Higher Secondary	32	23	18	20
First Degree	17	18	27	29
Post-graduate	5	12	11	21
No.	1 534	2 535	194	247

plan, was about 61 per cent.⁸⁶

Career planning involves more than just the efforts of the individual and the family. In this section, evidence on both the expressed need (demand) and the availability (supply) of career planning assistance is presented.

6.5.1 Demand for career planning

Respondents were asked to rank various methods to improve admission procedures; career guidance and counselling was one of them. Table 75 shows its relative importance.

It may be observed that career guidance was ranked as the most important in all cases by students and employees. Apart from this, there was not much difference of ranking within the two groups by field of specialization. Across groups, students ranked the use of employing

⁸⁶ There could be some response bias here whereby the respondents' current job is projected back to their early desired career goals.

Table 75: Ranking of procedures to improve career guidance

	Students			Employees			Unemployed		
	Science	Others	No.	Science	Others	No.	Science	Others	No.
1. Institute career counselling	2.3	2.1	1 086	2.3	2.4	2 131	2.0	1.7	153
2. Provide literature in schools	2.0	1.9	1 012	1.8	1.8	1 953	2.0	2.0	189
3. Use mass media	1.8	1.8	1 856	1.8	1.8	1 941	2.0	2.0	178
4. Use employing agencies	2.0	2.0	777	1.7	1.7	1 731	2.0	2.2	151
5. Establish direct links of intake - institutions and schools	1.9	2.1	752	1.7	1.6	1 551	2.4	2.6	85

Note: Most important is represented by 3 and least important by 1

agencies and links between schools and intake institutions higher than did employees. This procedure was, however, ranked much higher by the unemployed in both categories and it should therefore be given weight.

One could also indirectly infer the need for career counselling from respondents' answers to questions designed to gauge their satisfaction with their degree programme and field of specialization. One can assume here that the expression of a low level of satisfaction in both cases would suggest an objective need for career counselling. Tables 76 and 77 summarize the responses on these issues.

Table 76: Suitability of first degree programme to students's ability

Response	Students		Employees		Unemployed	
	Science	Other	Science	Other	Science	Other
Yes	88	85	89	87	55	74
No.	12	15	11	13	45	26
No.	799	720	147	1 233	107	141

Again there is little difference between the science and other categories for both the employee and student groups. Also, a very high degree of satisfaction with the first degree programmes is evident from the responses. This is not true for the unemployed, of whom only 55 per cent were satisfied with the first degree programme in science.

There was no real difference in response between those who had opted for a science or a non-science field of specialization. Employees in general felt satisfied with their chosen field whereas the responses of the students tended to express only moderate satisfaction with their fields. This shows a declining level of satisfaction with the chosen field of specialization over time.

Table 77. Respondent's ranking of level of satisfaction with chosen field of study

Level	Students			Employees			Unemployed		
	Science	Other	No	Science	Other	No	Science	Other	No
1st	2.3	2.1	1 449	1.9	2.0	2 242	2.3	2.2	225
2nd year	2.3	2.3	1 386	2.1	2.0	2 212	2.4	2.2	234
3rd year	2.4	2.4	1 217	2.1	1.9	2 142	2.2	2.1	221
4th year	2.4	2.4	1 159	2.0	1.9	2 150	2.1	2.2	219
Final year	2.4	2.6	1 955	1.9	1.9	1 854	2.2	2.1	215
On the job training	3.0	3.3	1 400	2.4	2.7	1 127	-	-	-

Note: Level of satisfaction was coded as 1 = highly satisfactory, 2 = satisfactory, 3 = of moderate satisfaction, 4 = of no satisfaction and 5 = cannot say as yet.

About a quarter of the students (a surprisingly high percentage) and two-fifths of employees indicated having had some on-the-job training. The expressed level of satisfaction with it was lower than with formal training (close to moderate satisfaction), and once again students expressed less satisfaction than employees.

An alternative way of ascertaining student level of satisfaction with their field of specialization is from the extent to which they expressed a regret in retrospect for not having chosen an alternative field. A more objective indicator would be the actual extent of switching that took place. Tables 78 and 79 present this information.

Table 78: Desire (expressed retrospectively) to change field of study by field of specialization

Response	Students		Employees		Unemployed	
	Science	Other	Science	Other	Science	Other
Yes	16	16	21	15	19	14
No.	84	84	79	85	81	86
No.	377	1 177	664	1684	173	64

A high, though not excessive, number in the employee group expressed a retrospective desire for a change in their areas of specialization. A significantly higher number in the science specialties, perhaps due to subject difficulty, expressed such a desire. This tendency had declined over time since among students a significantly lower percentage in the science specialties indicated their desire to change their subject of study. In fact, among the student group, there was no difference on this score between science and non-science students. Timely, high quality career and academic counselling could reduce the long run costs of heading in the wrong direction. Nevertheless, some switching is a sign of flexibility of an educational system.

Some idea of the real extent of readjustment costs from the actual field switching that went on can be gleaned from the table below.

Table 79: Actual shifts in field of study, in percentages

Response	Students	Employees
Yes	16	13
No.	84	87
No.	2 147	1 512

Although the actual shifts in the field of specialization were no very high, there was a slight increase. Also, when these numbers are considered with those who retrospectively indicated a desired shift, the need for counselling becomes more apparent.

The direction of the desired and actual shift in the field of specialization was also investigated. Respondents were asked to rank three preferred subjects. In all cases, employees preferred non-science subjects and the same was true for students. Thus, as may be expected, almost all the desired shifting was away from science subjects, since academic requirements would make the reverse shift very difficult. The actual shifts in the field of specialization were similarly one-sided. Among employees, 35 per cent of those who shifted did so from science subjects, whereas only 3 per cent shifted into science subjects. For the student group, the direction of shifting was also similar; 48 per cent of all those who shifted did so out of science subjects, whereas 9 per cent shifted into science subjects. That such a sizable proportion of shifting takes place from sciences is naturally of concern. Most of the shifting that occurs from science subjects take place at the first degree level, which is not surprising as beyond that real career specializations begin.

Very few respondents stated the reasons for the shift in their field of study. Of those who did, the majority cited admission requirements as the main reason.

6.5.2 Supply of career counselling

Respondents were asked whether they had the opportunity to discuss future career plans with teachers. Although a high affirmative response would not necessarily indicate an adequate availability of career counselling facilities, a negative response would certainly suggest an inadequate presence of such facilities in academic institutions.

Table 80: Opportunity to discuss career plans with teachers by field of specialization

Response	Students		Employees		Unemployed	
	Science	Other	Science	Other	Science	Other
Yes	96	87	97	80	42	52
No.	4	13	3	20	58	48
No.	293	78	436	109	59	173

As can be noted from Table 80, a significantly higher portion of science students in the employee and student groups mentioned having had the opportunity to discuss their career plans with their teachers. Although most of those who responded to the question did so in the affirmative, only one-fifth of the employees and one-fourth of the students in the respective samples actually responded. It is, therefore, not possible to infer from the response pattern that there is a systematic and adequate mechanism for providing career advice to students. The response rate was higher among the unemployed, but their responses painted a bleak picture. Only about one-half in the non-science group and two-fifths in the science group mentioned having had the opportunity to discuss career plans with teachers.

Respondents were also asked about their decision-making process in choosing a field of specialization. Career guidance was one of the

possible aids listed for this process and its relative importance may be ascertained from Table 81.

Table 81: Various factors assisting the choice of a field of study,
 in percentages

	Students	Employees	Unemployed
1) Assistance of parents	46	49	44
2) Assistance of career guidance	2	2	1
3) Contacts of employing agency	-	1	-
4) Contacts through friends	8	7	21
5) Applied to several institutions	1	3	1
6) Individual decision	43	38	34
No.	1 508	2 544	244

For all groups, either the individuals themselves or their parents appear to be the main inputs for the critical decision of choosing a field of specialization. Career guidance played an extremely limited role.

So far, the role played by career guidance, judging by how important an input it was in respondents' major decisions, has been examined. It is possible to indirectly infer availability from usage. However, the questionnaires provided for more direct information about availability which can be gathered from responses on whether institutions provided career guidance facilities. Over three-quarters of employees and students were in institutions that offered no access to career guidance. Public and private institutions differed in this regard, and the results are reported in Table 82.

Table 82: Distribution of respondents with access to career guidance facilities by type of institution, in percentages

	Students	Employees
Government	74	51
Semi-government	25	46
Private	1	3
No.	338	600

Government institutions have been providing the highest and significantly increasing proportion of career guidance facilities. Only 1 per cent of all students who had access to career guidance were in private institutions. Career counselling at the early college stage can be the most productive. However, only about one-fifth of the employees and one-third of the graduates attending institutions offering only the first degree had access to counselling.

The availability of career guidance was also ascertained from the responses of representatives of educational institutions. Just over a third of the respondents affirmed the existence of career counselling in their institutions. About half of these stated this was offered during the entire study programme, whereas a quarter said it was provided in the final year of the study. Over two-thirds of the respondents in educational institutions stated that students were given the opportunity to discuss their continued plans with the teachers.

Effective career counselling can be a major factor in making a smooth transition from the world of education to the world of work. This transition process is the subject matter for the next section.

6.6 Transition to work

Transition to work is based, among other factors, on knowledge and information of the labour market and contacts. Employees and the unemployed were queried about the channels they had utilized in securing, or attempting to secure a job, and the frequency distributions are presented in Table 83.

Table 83: Methods utilized to procure employment or begin job search

Methods	Employees	Unemployed
	(Procuring Employment)	(Starting job Search)
Contacts(a)	28 (747)	4
Newspapers	62 (1624)	95
Employment exchange	2 (54)	
Educational institutions	3 (81)	1
Other	5 (166)	-

(a) Contacts include personal contacts as well as those of relatives and employers.

A surprisingly high number of employees (three-fifths) got their first jobs after graduation through newspaper advertisements. Contacts were also an important source of gaining employment. To the extent that individuals may not want to admit having secured a job via contacts, this method's importance may be understated. Also the job may have been spotted in a newspaper but contacts used to attain it.

The respondent with an either or choice may have opted for newspaper as the answer.

That only 4 per cent of the unemployed mentioned contacts also suggests that their lack of them may explain their predicament. The 95 per cent looking through newspapers for job advertisements were not misguided since this method was cited as by far the most important by the employed. The importance of the educational institutions or the role of the employment exchanges is undoubtedly lacking in the functioning of the labour market.

Although employment exchanges were not considered very important, judging from the low priority given them when individuals started job search, 21 per cent of the unemployed did actually register with employment exchanges. Nor were the unemployed in an unfortunate predicament for want of trying. They submitted an average of eleven applications and attended an average of eight job interviews.⁸⁷

An analysis of the employers' questionnaires also shows the importance of newspaper advertisements and contacts. As Table 84 shows, about two-thirds of recruitment occurred through these sources.

Employers appear to attach more weight to the role of employment exchanges, albeit still a limited one. Once again, educational institutions played a completely insignificant role.

One reason for the minor role of the educational institutions may be the absence of a link between them and employers. Only 13 per cent of employees indicated the presence of such a link and that three-fifths of such institutions provide placement services for only a few students. Table 85 shows the perception of the extent of the link between educational institutions and employers for those employees who responded in the affirmative to the presence of such a link.

These links are also examined from the perspective of sampled respondents in educational institutions. Thirty-five per cent of the respondents (N=144) said that the institution had links with the employers. This is not too different from the perceptions of the employees. Thus it appears that it is not so much a question of the complete non-existence of links but rather of the efficacy of those that exist.

⁸⁷ The standard deviations were 4.8 and 15.4 respectively.

Table 84: Employer's recruitment methods

Methods	Percentages
Contacts	17
Employment exchange	13
Newspaper advertisement	50
Public service commission	16
Educational institutions	1
Others	3
No.	299

Note: The employers indicated that the method of selection was either interviews (63 per cent) or both an interview and a written test (37 per cent).

Table 85: Employees' perceptions of educational institution—employers links

Availability	Percentage educational institutions
For few students	58
For all students	42
No.	331

Only 20 per cent of the existing links were with the private sector—the rest being government organizations or government funded autonomous organizations. In 28 per cent of the cases, the employer actually approached the educational institution. However, upon place-

ment, follow-up services were provided to graduates in only 18 per cent of the cases.

The self-employment were questioned concerning their interest in offering jobs to students during vacation periods to enable them to acquire practical experience. Two-fifths showed a positive interest. One-third actually had job placement programmes for graduates. Although more information was not available about the details of these links, they do not appear to be promising.

An analysis of the expressed level of satisfaction about the different recruitment methods may indicate the need and the scope for improvement in hiring proceedings.

Table 86: Employees' level of satisfaction with recruitment method by field of specialization

Level of Satisfaction	Science	Others	Total	No.
Quite satisfied	35	32	33	817
Reasonably satisfied	54	53	53	1 318
Not satisfied	10	16	14	345
No.	717	1 763	2 480	2 480

Table 86 indicates that 86 per cent of employees were satisfied and only 14 per cent were not satisfied with the methods of recruitment. It also shows that a relatively higher proportion of non-science employees were not satisfied with the recruitment methods. However, a long waiting period before finding employment may be one reason for dissatisfaction with recruitment methods. Table 87 gives a frequency distribution of the length of the waiting period.

Table 87: Length of waiting period to find first job

Years	Percentage	No.
0.5 years	50.4	872
0.5 - 1 years	26.1	451
1.1 - 2 years	14.4	248
2.1 - 3 years	4.2	73
3.1 - 4 years	2.0	35
4.1 - 5 years	1.3	23
5.1 - 6 years	0.6	10
6.1 - 7 years	0.5	8
7.1 - 8 years	0.3	5
8 years	0.2	3
Total	100.0	1 728

On average employees had to wait for ten to eleven months before getting their first employment. One-half of those who reported the length of the waiting period, waited for approximately six months, and about a quarter waited for approximately one year. The remaining respondents had to wait for more than one year. In fact, as is evident from Table 87, the average waiting period for the third category was quite long. In Table 88, the reasons for the wait have been enumerated, although a very small fraction of the sample of employees responded to this question.

An insufficient number of advertisements, an excess of graduates in the market, lengthy methods of recruitment, and delayed examinations and results were the major reasons cited. But the very small number of respondents in each category make it difficult to suggest with confidence the areas where improvements are required.

The employees also gave some suggestions to facilitate the reduction of the waiting period.

As will be noted from Table 89, the response rate for suggestions is relatively higher than that for identifying the reasons. Approximately

Table 88: Reasons for waiting

Reasons	Percentage
Poor academic results	3.94
Lack of work experience	1.57
Post not advertised	12.6
Non-satisfaction from potential job	8.66
Excess of graduates in the market	18.9
Lack of personal contacts	2.36
Prerequisite training programme needed	0.79
Lengthy method of recruitment	19.69
Non-availability of jobs	3.36
Over age	0.79
Late conduct of examinations and publication of results	14.96
Others	13.39
No.	127

57 per cent of the respondents recommended an arrangement for a temporary job before the permanent one. Perhaps this would provide the requisite experience. Selection on the basis of qualifications is also held to be important. Approximately 7 per cent suggested the need to establish a link between educational institutions and employing agencies. Considering that only 1 per cent of employing institutions mentioned the existence of such a link, this issue certainly needs to be looked into.

In addition to the problems related to the labour market, the individual's own academic career, socio-economic status, field of specialization and regional (urban/rural) background may be important in determining the length of the waiting period. Individuals with a bright academic performance could be expected to face shorter waiting periods. Socio-economic status may be negatively related to the length of waiting period since students with a higher socio-economic status may experience a shorter wait due to the right contacts. The respon-

Table 89: Suggestions for reducing waiting period

<u>Suggestions</u>	<u>Percentage</u>
Necessity of advertisement of post	3
Link between employer and educational institutions	7
Quick employment after advertisement	4
More job opportunities	2
Purely merit without quota	2
Temporary job arrangement before permanent job	57
Balancing supply and demand for skills	3
Standardization of recruitment criteria	1
Assessment of qualification concerning job	10
Other	9
No.	795

dents with rural backgrounds may have to wait longer due to less accessibility to information about the labour market, or, once again, to lack of contacts. Females may have to wait longer due to lower regional mobility or simply due to discrimination on cultural grounds. Students with a science education would be expected to face shorter waiting periods insofar as science-based skills are in greater demand. Selective cross-tabulation did confirm this as Table 90 shows.

Table 90: Mean waiting period by field of specialization and province, in months

Province	Sciences	Humanities/ Social Sciences
Punjab	8.0 (254)	12.1 (326)
Sind	8.8 (158)	7.9 (298)
NWFP	9.7 (165)	9.2 (307)
Baluchistan	3.3 (67)	6.1 (137)
Federal Area	5.8 (37)	8.8 (70)

Notes: 1. No. is presented in the parentheses

2. Counts on other fields were too low for reporting

In three out of five provinces, job candidates with science-based degrees had a shorter wait for their first job. Sind was an exception where candidates with a science-based degree waited on average two months more than non-science students. This may show that a surplus existed in Karachi (which dominates the Sind educated employed labour market) of students with science degrees.

Science candidates from NWFP had the highest waiting period (9.7 months) which was over six months greater than the corresponding waiting period for Baluchistan. For the humanities/social sciences, the highest mean waiting period of one year for the Punjab was again six months greater than the lowest waiting period for Baluchistan.

Waiting period was also tabulated by occupational categories corresponding with the fields of specialization. The responses allowed for a richer cross-tabulation which is shown in Table 91.

Table 91: Mean waiting period by occupational categories and provinces, in months

Provinces	Science	Engineering and technology	Teaching	Health and medicine	Law
Punjab	5.6 (32)	2.8 (115)	10.8 (478)	3.31 (39)	-
Sind	12.1 (21)	3.0 (67)	7.1 (98)	5.26 (31)	5.52 (25)
NWFP	-	-	10.8 (156)	4.80 (10)	-
Baluchistan	1.25 (16)	3.0 (29)	4.2 (126)	-	-
Federal Area	-	7.0 (44)			

Notes: 1. Parentheses contain item responses.

2. Hyphens indicate a response of less than ten.

The most marketable professions of those considered, judging from the waiting period, were engineering and technology and health and medicine. The least marketable were teaching and the basic sciences. It would be useful to use these waiting periods as benchmarks for the seventies to compare with the more recent job market waiting experience (e.g. the apparent glut of young doctors in the cities).

The high absorptive capacity in Baluchistan may reflect the emphasis on its development during the seventies. For individual occupations, Sind had a high mean waiting period (over one year) in the sciences. Thus the surplus that existed in Sind in the sciences showed through. Punjab and NWFP had high waiting periods (almost eleven months) for the teaching profession.

To analyze the determinants of the waiting period, it was regressed on several explanatory variables, including those mentioned above (for a complete listing of variables, see Annex B, Table II). Although, the total variance in the waiting period explained by these step-wise regressions was poor, the results were deemed worth reporting due to several insights that were obtained.⁸⁸

$$\begin{aligned}\text{Waiting Period} = & 11.88434 - .86371 \text{ performance} + 3.6032 \text{ Federal} \\ & (4.82) \qquad\qquad\qquad (5.36) \\ & + 2.1456 \text{ Sind} + .2990 \text{ Age} - .0039 \text{ Age}^2 + e \\ & (2.87) \qquad\qquad (2.10) \qquad\qquad (2.43)\end{aligned}$$

$$R^2 = .025, F = 11.77$$

Note: Parentheses contain t-values

The most interesting aspect of the regression is the significant and inverse association of waiting period and performance, i.e. the implication is that those with better academic performance wait less. It is gratifying to see the market having rewarded scholastic achievement. Age showed up with a positive sign and age squared with a negative one. Higher age, it appears, is a handicap on the job market. To some extent, this may reflect respondents having passed the age limits for jobs, and to some extent a preference of employers for young candidates who may be perceived as more adaptable and trainable. This perhaps is offset by the added maturity of the candidates upto a certain date since the sign of age squared is positive.

Only the Federal Area and Sind were picked up as significant provincial dummies. Other variables held constant, the Federal Area's average expected waiting period was about 15½ months, while Sind's was

⁸⁸ See also Raffi et al. [7]

about 13 months.

Although, waiting for a job is unpleasant, the group so far studied did find employment. The perceptions of those who were unsuccessful in making a transition to the world of work requires special consideration. Thus, in Table 92, we present the ranking of various reasons which in the opinion of the educated unemployed were responsible for the unemployment problem.

Table 92: Ranking by the unemployed of various factors responsible for unemployment

<u>Factors</u>	<u>Average weights</u>	<u>No.</u>
1. Undue increase in output from arts-based courses	2.26	223
2. No relation between the higher education system and the labour market	2.51	240
3. No availability of correct information for graduates about where jobs are and how to get them	2.54	243
4. Not up to job-seekers expectations in respect of salary location, status and conditions	2.40	237
5. Stagnation of the economy	2.37	226
6. No government efforts to create jobs for graduates	2.59	237
7. No national policy for employment of graduates	2.62	230
8. Departments with subjects not required still exist and contribute to unemployment	2.37	205

Note: Weights varied from 1 to 3, with 3 being the maximum.

The unemployed felt that lack of a national policy to create employment was a major reason for their condition. Other factors ranked high were insufficient labour market information about jobs and the lack of correspondence between the labour market and the higher education system. The employee's responses also put non-advertisement of posts among the more frequently cited reasons contributing to a longer waiting period (See Table 88).

Information was also collected on the perceptions of the unemployed and self-employed concerning why they personally were unable to get jobs. The responses are reported in Table 93.

Table 93: Ranking of reasons for their unemployment by the unemployed and self-employed

Reasons	Self-employed		Unemployed	
	Average weight	No.	Average weight	No.
Lack of minimum qualifications	1.8	(32)	2.1	(33)
No help for relatives or friends	1.8	(33)	2.3	(133)
No help from political connections	2.2	(37)	2.3	(176)
Caste, community or religious bar	1.3	(29)	-	-
Inadequate school or campus background	1.5	(30)	1.8	(78)
Inadequate performance in interviews	1.6	(30)	1.6	(103)
Lack of physical factors required for job	1.2	(27)	-	-

For the unemployed, a lack of contacts either via family or friends or via political connections were perceived to be the most important

causes of a personal failure in obtaining employment. This reinforces the earlier finding that contacts were an important method of actually having procured a job (See Table 83).

Amongst the self-employed, 27 per cent (40) had unsuccessfully attempted to seek a job before going into business for themselves. Once again, the self-employed also viewed lack of contacts as the most important explanatory factor in their inability to find jobs. The lack of an adequate school or campus background were not rated as important reasons in either case. The interrelationships between students' academic backgrounds and their jobs is examined in more detail in the next section.

6.7 Interaction between higher education and occupation

In this section, the main objective was to determine the extent, nature and direction of interaction between the field of specialization and choice of occupation. More than 90 per cent of employees indicated that their institutions did prepare them for their future role.

Also, only 4 per cent of the self-employed considered their educational qualifications as irrelevant to their setting up in self-employment. In order to show the correspondence between the fields of specialization and occupations, the percentage of employees in jobs directly related to their field of specialization has been reported in Table 94.⁸⁹

There is little correspondence between field of specialization and choice of occupation for those entering the job market after their Bachelor's degree in the areas where the responses are large enough for generalization. The statistical tests applied to examine the association between field of specialization and occupation also confirm simple observation.⁹⁰ More specialization in post-graduate courses considerably

⁸⁹ The distribution of employees by field of specialization is given in Table 56.

The matrix of occupation by field of specialization had too many missing cases. The interesting result emerging from it was that about two-fifths of basic science and humanities and social science graduates entered the teaching profession.

⁹⁰ Cramer's V statistic is only .06 for those who enter the job market after a Bachelor's degree, whereas it is .27 for those doing so after a post-graduate degree.

Table 94: Relationship of occupation and field of specialization, in percentages

Field of Specialization	After graduation Occupational Category			After post-graduation Occupational Category		
	% Same	% Different	No.	% Same	% Different	No.
Basic science	8	92	681	21	79	205
Engineering and technology	57	43	7	67	33	42
Agriculture	0	100	6	32	68	22
Humanities/social sciences	1	99	1 138	1	99	275
Teaching	100	0	3	100	0	40
Health and medicine	67	33	3	20	80	106
Law	0	100	2	0	100	1
Total	4	96		24	76	
No.	(74)	(1 766)	1 840	(141)	(450)	591

increases the correspondence between the two. The tabulations show that most of those seeking employment after the post-graduate teaching degree join the teaching profession.

Despite the low level of association indicated above, as can be seen from Table 95 the employers seem to be moderately satisfied by the performance of the employed graduates.

Table 95: Ranking of employers' satisfaction with performance of employees by sector

Field of Specialization	Public	N	Private	N	Joint	No.
Basic science	2.3	49	2.0	70	2.2	14
Engineering and technology	2.3	45	2.0	74	2.1	14
Agriculture	2.2	16	2.3	9	2.0	3
Humanities/social sciences	2.3	61	2.2	38	2.3	15
Teaching	2.5	23	2.5	4	2.8	4
Health and medicine	2.2	19	2.0	22	2.3	6
Law	2.2	23	2.2	30	2.3	9

Note: The mean level of satisfaction was computed by using the coding of 3 for highly satisfied, 2 for reasonably satisfied and 1 for least satisfied.

Teachers appear to be performing most efficiently in both the private and public sectors. This is surprising, given the widespread dissatisfaction over falling standards of education. There is little difference in the expressed level of satisfaction across sectors. Table 96 shows that employees also indicate moderate satisfaction with the use of their skills. The reader may imagine a recoding of aspects one to four into 'professional', nine and ten into 'remuneration', and the rest into 'working conditions'. One then finds the greatest level of satisfaction with the professional aspects of the job and least satisfaction with remuneration. Satisfaction with working conditions varied, with employees showing the least satisfaction as regards promotion and travel opportunities. Table 97 shows that the perceptions of employers concerning the relative importance of various elements of job satisfaction matched those of the employees.

It is encouraging to observe that employers are somewhat aware of the importance of higher salaries and fringe benefits. These benefits were most frequently cited by establishments as the incentives offered for job satisfaction/retention across the different fields of specialization.

As an aside, job satisfaction of the self-employed was also investigated. Eighty-six per cent of them stated they were satisfied with their present work. Table 98 gives details of their responses concerning different aspects contributing to job satisfaction.

While earnings were viewed as important by the self-employed, the greater emphasis was on opportunity to use talents and the self-fulfilment from the job. Another indication of the satisfaction derived by the majority of self-employed from their jobs is that only about one-fifth said they would like to switch over from their present work to any other employment in a private or government organization. Once again, the highest ranking by those who did want to change was in order to serve the community in a better way in an official position. It appears that self-employment well suits a personality-type given to pursuing self-fulfilment but those with a more social orientation feel frustrated with it.

Returning to the employee responses, the analysis showed that although they indicated moderate satisfaction with the various aspects of their jobs, their responses to queries about the need for on-the-job training (OJT) did not reveal complacency.

About 52 per cent of total employees mentioned the need for on-the-job training. As can be noted from Table 99, in science, more

Table 96: Ranking of employees' satisfaction with the various aspects of their jobs by field of specialization

Aspects	Science	No.	Level of satisfaction	
			Others	No.
1. Use of professional skills	2.3	716	2.2	1 816
2. Creative work	1.9	710	1.9	1 750
3. Improvement of competence	2.1	707	2.0	1 740
4. Academic pursuits	2.0	707	1.9	1 746
5. Travel involved	1.7	677	1.6	1 711
6. Promotion	1.7	712	1.7	1 788
7. Security	1.9	709	1.9	1 775
8. Social	1.9	695	1.9	1 741
9. Salary	1.8	721	1.7	1 806
10. Fringe benefits	1.6	699	1.6	1 743
11. Working conditions	2.0	711	1.9	1 759
12. Service to community	2.2	698	2.2	1 748

Note: Level of satisfaction was calculated by taking an average for different level of satisfaction which are coded as 3 for highly satisfied, 2 for moderately satisfied and 1 for least satisfied.

Table 97: Incentives offered by employers for job satisfaction/retention by field of specialization, in percentages

Field of specialization	Overseas training	Higher salary	Fringe benefits	Better working conditions	No.
Basic sciences	19	38	23	21	136
Engineering and technology	36	28	24	12	25
Agriculture	14	33	25	24	97
Humanities/social sciences	22	22	26	22	27
Teaching	3	29	21	45	38
Health and medicine	-	32	21	40	47
Law	9	36	21	33	66

males than females expressed such a need, and more students in the 'other' category supported such a plan. These results are encouraging in that science students may implicitly be indicating a fairly high degree of satisfaction with formal education. However, in absolute terms, there are far too many students in the non-science category who appear not to be equipped with skills specific to the requirements of the jobs they obtained.

The question that follows is whether adequate facilities exist for on-the-job training.

Table 100 shows that on-the-job training facilities are provided by only 14 per cent of total educational institutions. The proportion of private educational institutions providing such facilities is significantly higher. However, a significantly higher proportion of government-owned employment establishments provide such training as evident from Table 101.

Table 98: Ranking by self-employed of satisfaction with various aspects of their jobs

	<u>Aspects</u>	<u>Average weights</u>	<u>No.</u>
1.	Able to utilize talents	2.8	163
2.	Higher individual earnings	2.4	157
3.	Better prospects for future	2.5	152
4.	More time off for family and hobbies	2.0	148
5.	Self-fulfilment	2.6	152
6.	Secure future	2.1	137
7.	Mutual trust among colleagues/employees	2.3	140

Note: Highly satisfied was weighted 3, satisfied was weighted 2 and not satisfied was weighted 1.

Table 99: Expression of the need for OJT by field of specialization and sex, in percentages

<u>Sex</u>	<u>Science</u>	<u>Others</u>	<u>No.</u>
Male	35	65	1 154
Female	23	77	207
Total	33	67	1 361

Table 100: Facilities for OJT provided by educational institutions by type of institution, in percentages

Type	Provide OJT	Do not provide OJT	No.
Government	16	84	1 083
Semi-Government	11	89	1 150
Private	26	74	65
Total	14	86	2 298

Table 101: Provision of OJT by employers by sector, in percentages

Sector	Establishments providing in-service training	No.
Public	58	123
Private	32	123
Joint	68	31
Total	48	277

Employers were asked to indicate the type of training their employees required. The response of different employing institutions is reported below.

Table 102: Employers' perceptions of the nature of training required by field of specialization, in percentages

Field of Specialization	Away from Organization	Partially Away	Abroad	No.
Basic science	24	49	27	67
Engineering and technology	23	48	30	61
Agriculture	26	53	21	19
Humanities/social sciences	18	55	27	51
Teaching	31	31	38	16
Health and medicine	12	62	25	16
Law	17	78	6	18
Others	35	51	14	37

Table 102 shows that most of the employers recommend training which would entail employees being partially away from the organization. A significant proportion of employees are perceived as needing training abroad, particularly in the teaching profession.

Contradictory findings seem to have been arrived at in this section. Although the employees expressed moderate satisfaction with the use of their professional skills (See Table 96) and indicated that their degrees suited their jobs, the relationship between field of education and occupation was not very strong. This was especially so for those who enter the job market after a Bachelor's degree. Moreover, employees also expressed a high need for on-the-job training, which shows that some improvement is desired either in the labour market or in the education system to enhance their mutual correspondence.

Both employers and employees gave suggestions in this regard. Table 103 lists the suggestions of the employers.

Table 103: Employers' suggestions to improve job performance

Suggestions	Percentages
On-the-job training	14
Refresher courses	21
Improvement in teaching	31
Better working conditions	6
Career guidance in educational institutions	3
Pre-service training in the field	11
Others	14
No.	71

It will be noted that a high proportion of employers recommended an improvement in teaching. Refresher courses and on-the-job training were also considered important. Table 104 reveals the suggestions of the employees.

The need for a survey of job requirements to improve the educational programme was ranked the highest. The development of educational programmes in collaboration with field experts and employing agencies was also considered important. Contrary to the employers' suggestions, changes in the educational programme was given least priority.

This is quite consistent with the responses of the employees indicating suitability of their degrees to job requirements. The employees expressed lower levels of satisfaction with salaries, fringe, and other material benefits. This lower level of satisfaction could lead to frequent changes in jobs. Mobility in the labour market is investigated in the next section.

Table 104: Ranking by employees of different methods for improving educational programmes

Methods	Average Weights	No.
Survey of specific job requirements	2.3	2 207
Frequent changes in educational programmes	1.5	1 758
Developing educational programmes in close collaboration with field experts and employing agencies	2.0	2 168
Establishing links between educational institutions and employing agencies	1.7	1 967

Note: Average weights were calculated using a three-point scale with 3 as the highest and 1 the lowest.

6.8 Labour mobility

Although labour mobility is the main subject of this section, we have also looked at regional mobility. To analyze this, we compared the domicile of birth and current residence of the respondents. Table 105 shows a significant difference in the regional distribution of employees by domicile and current region of residence. An examination of the numbers suggests a considerable movement towards urban regions, probably due to the greater job opportunities. The questionnaires did not seek the precise reasons for such shifts.

The extent of occupational mobility is more limited. Only 15 per cent of total employees changed job once and one-tenth reported a second shift in occupation. This can partly be explained by the fairly high percentage of employees who were under 30 years of age at the

Table 105: Regional mobility, in percentages

Region	Domicile of Birth	Present Residence
Urban	65	82
Rural	35	18
No.	2 425	2 409

Table 106: Occupational mobility by sex

Sex	Percentage who changed job	
	Once	Twice
Male	90	92
Female	10	8
No.	387	271

time the survey was conducted (See Table 49). From Table 106, we note that occupational mobility is confined mainly to males, probably due to social and cultural constraints on female mobility.

The data show that most of the employees who changed jobs remained in the same occupational category. The magnitude of such changes is delineated in Table 107.

The findings show that most of those who changed jobs once or twice remained within the same occupational category. The statistical tests also indicated a high degree of association between employees' first and second jobs and between the second and third.⁹¹

⁹¹ The Cramer's V statistic was .69 between the occupational categories in the first and second job and .67 between second and third job.

Table 107: Incidence of mobility by occupational category

Occupational categories	Percentage who			
	Changed job only once in the same specialization	No.	Changed job twice in the same specialization	No.
Basic sciences	74	23	75	8
Engineering/technology	85	92	80	36
Agriculture	-	-	-	-
Humanities/social sciences	-	-	-	-
Teaching	92	195	91	75
Health/medicine	88	24	82	11
Law	-	-	-	-
No.		334		130

A number of factors could be responsible for occupational mobility. Table 108 shows the responses of employees concerning reasons for changing occupation. Better prospects was the major reason for changing jobs for both groups. Other than that, among those who changed jobs once, further study was significantly more important in the science group. Among those who changed jobs twice, transfer or having a temporary post was significantly more important in the science group, while dissatisfaction was more so for the non-science group.

We looked at the opportunities for occupational mobility provided

Table 108: Reasons for changing jobs by field of specialization,
in percentages

Reasons	Science		Others	
	Once	Twice	Once	Twice
Dissatisfaction	7	4	9	15
Low socio-economic condition	2	-	3	2
Self-employment	1	4	4	-
Temporary post	9	16	9	9
Better prospects	55	51	56	56
Study	13	6	4	7
Transfer	12	15	13	9
Forced to resign	-	1	2	1
Others	-	-	-	-
No.	149	68	223	95

within the different types of employing institutions.⁹² An economist moving from the Planning Commission to the Bureau of Education in an educationist's position engages in both horizontal and vertical mobility if it entails a change in profession as well as in grade.

⁹² Vertical mobility refers to upward movement within the establishment and within the same profession i.e. grade 17 to 18.

Table 109: Nature of occupational mobility opportunities within different types of establishments, in percentages

Type of mobility	Public	Sector Private	Joint
Horizontal	4	6	7
Vertical	21	20	14
Both vertical & horizontal	75	74	79
No.	110	84	28

It will can be seen from Table 109 that there is very little difference in the type of mobility offered by different types of establishments. One of the most important reasons for occupational mobility was 'better prospects', which would include the remunerative aspects of the jobs. This has been investigated in more detail in the next section.

6.9 An analysis of earnings

In section 6.6, the waiting period to find a job of employees was related to several variables such as field of specialization, province, sex and occupation. A long waiting period suggests an excess of supply over demand. This could occur because too many students ended up specializing in the same field due to various reasons such as tradition, academic preference or inadequacy, misdirection of lack of information on labour market conditions. Alternatively, the waiting period could suggest a queue for an occupation with a greater than average mean salary. Thus earnings can be introduced as another dimension which might shed more clarity concerning the job market situation.

In this section, mean earnings are first related to the various variables mentioned above by occupational categories. The results are

contrasted with mean waiting period by occupation. Following this, a regression model is used to estimate the explanatory power of these and other variables in explaining the variation in earnings.

Table 110 shows mean earnings by province and occupational categories.

Employees in the engineering and technology professions drew the highest salaries while those in teaching had substantially lower ones. This corresponds well with the highest waiting period to find a job in the teaching profession and the lowest in engineering and technology. Thus one may infer that high demand for engineers and other technologists kept salaries for this category high, while an excess supply of teachers kept their salaries low.

Respondents in Sind were earning the most as engineers and technologists and this could suggest buoyancy of the private sector in Karachi. The corresponding low salary for the Federal Area seems to reflect the starting salary for graduates with Master's degrees in the public sector. Students have obviously been responding to the high salaries in the engineering/technology profession since the growth in enrolments in this field during the seventies increased significantly (See Chapter 5, Table 35).

The professions that appear to be favourable to females are teaching, sciences and health and medicine (See Table 111). While in the first occupation, there is no difference in mean salary, in the last two females surprisingly earned considerably more than males Rs. 2,117 as opposed to Rs. 1,492 per month,⁹³ in health and medicine and Rs. 2,428 as against Rs. 1,903 per month in Sciences. The explanatory power of these as well as the other background and human capital variables was tested using the earning function model.

Using a separate regression the predictive power of only the human capital variables (i.e. education and age, and age squared as a proxy for experience) can be tested.

The combined explanatory power of these variables was only 18 per cent of the total explanatory power of the full specification. Both specifications are given in Table 112.

⁹³ Up to January 1982, the value of \$1 in rupees was fixed at Rs. 9.90. Currently, it is Rs. 15.79. See Muslim, Feb. 18 1985, p.4.

Table 110: Mean monthly earnings by province and occupational categories

Occupational category	Punjab	Sind	NWFP	Baluchistan	Federal Area	Total	No.
Sciences	1 920	2 061	-	1 709	-	1 986	76
Engineering and technology	2 300	3 056	-	2 613	-	2 423	246
Agriculture	-	-	-	-	-	-	-
Humanities/social sciences	-	-	-	-	-	-	-
Teaching	1 681	1 512	1 558	1 941	-	1 690	753
Health and medicine	2 104	1 187	-	-	-	1 709	79
Law	-	1 059	-	-	-	1 118	24

Note: Hyphen represents an item response of less than 15.

Table III: Mean monthly earnings by sex and occupational categories

Occupational category	Male	No.	Female	No.
Sciences	1 903	64	2 428	12
Engineering and technology	2 445	239	1 641	9
Agriculture	2 427	12	-	
Humanities/social sciences	2 525	12	-	
Teaching	1 689	521	1 686	227
Health and medicine	1 492	51	2 117	27
Law	1 118	24	-	

Both specifications are highly significant (significant at the 1 per cent level) as indicated by the F- statistics. The total variation in earning explained even by the full specification is low. Nonetheless, some of the findings that emerge appeared interesting and worth reporting.

The human capital specification shows age and age squared to have the reverse signs to the underlying theory (and general results) of the human capital model. In the full model specification, identified through step-wise regression, age was excluded and therefore the sign of the age squared co-efficient is not surprising since it is capturing the positive effect of age or experience on the variation in earnings. The co-efficient of the Bachelor's degree dummy surprisingly shows that those with a Bachelor's degree on average earned 14 per cent more than those with advanced training. The education variables, however, were

Table 112: Results of the earning function regressions

	Human capital specification		Full specification	
	B	Beta	B	Beta
Educational level				
Bachelor's degree	.2570 (5.16)	.1480		
Master's degree	.0546 (1.37)	.036 ^{**}		
Age	-.0179 (2.40)	-.2138		
Age squared	.0002 (2.51)	.2107	.0001 (2.23)	.0235
Performance			.0567 (5.38)	.1390
Parental Education				
Mother/low			-.2568 (5.47)	.1684
Mother/middle			-.2481 (6.08)	.1798
Parental Income			.0007	.0625
Occupational category			(2.58)	
Humanities/social science			-.6722 (2.90)	.0696
Teaching			-.1665 (4.64)	.1189
Health and Medicine			-.4464 (3.01)	.0728
Law			.7467 (4.64)	.1124
Province				
Punjab			.1850 (4.30)	.1230
Sind			-.1188 (2.27)	.0618
NWFP			.1295 (2.50)	.0644
Constant	7.6132		6.8128	
No	2083		1570	
R ²	.62		.11	
F	10.90		16.36	

Note: 1. The missing categories for the dummy variables are advanced education for employees, high level education of mothers, Baluchistan for provinces and the average of occupations not included in the analysis. For occupations included see Table 110. For a complete list of the variables used in the regression model see Annex B Table III.

2. Parentheses contain t-values.

dropped in the full specification since the step-wise procedure did not include them as significant variables.

Using the beta co-efficients, the mother's educational level and the respondent's own performance showed up to be the main determinants of earnings. Following these, province and the occupational categories were the sets of dummies with high explanatory power. The performance variable shows that a one unit increase on the performance index resulted in a 6 per cent increase in earning power.

The educational level of the mother appears to have been quite influential in determining a student's future earning capacity— as indicated by the beta co-efficients which rank the highest. Respondents with highly educated mothers earned on average about 25 per cent more than those whose mothers had a middle or low level of education. While the fathers are busy with their own careers, highly educated women may be playing a very important role in determining the success of their children. Although parental income was a significant variable, its impact was limited.

In the other sets of variables, the teaching and humanities and social/science categories led to the lowest expected earnings—a result already derived informally. For the provinces, Punjab job candidates had the highest expected earnings followed by NWFP and Sind.

Probably the main conclusion following from these estimations is that the socio-economic background variables are more important determinants of earnings than the human capital variables. Such a result was also evident in some other studies in this series.⁹⁴

6.10 Summary of findings

Five samples were utilized in this chapter: those of employees, students, self-employed, unemployed graduates, and employers. In the earlier part of this chapter, the determinants of admissions, educational attainments and performance, and career planning are partly framed as a comparison between the students and employers to use the time difference in their educational experience. In other sections, the employers sample is used to juxtapose their perceptions with those of the employees. Also, on similar issues, the experience and perceptions

⁹⁴ See Sanyal [8], p.207.

of the self-employed and the unemployed are related to the other groups, i.e. the students and employees.

Another analytical technique utilized quite frequently in the earlier sections is the juxtaposition of subjective and objective information. Thus, where possible, the perceptions of respondents on a particular issue are compared to the results drawn from cross-tabulations using objective or background information in the questionnaires.

In reviewing the characteristics of the student and employee groups, it was apparent that over time a larger percentage of total students were being drawn from the female sex and from a rural domicile. Although this is an encouraging result, other findings were less encouraging. There was a decrease in the percentage of students being drawn from a lower or middle socio-economic groups relative to a higher one. Also for all groups, the upper income brackets (relative to the distribution in the population as a whole) were over-represented in higher education while the lower income bracket was under-represented. The lower socio-economic bracket was the one that had the most unemployed relative to the other groups. In contrast the largest percentage of self-employed were from the upper socio-economic bracket relative to the other groups.

For the first part of the analysis, socio-economic background, sex, and domicile were utilized to explain various aspects of the students educational experience. These were the 'objective' background variables on which information was available. Socio-economic background played a negligible role in the educational process though it was often not as statistically significant as expected. The percentage of employees facing non-admission was lower for those in the lowest socio-economic strata than their representation in the sample. The hypothesis that science subjects disproportionately draw students from the upper socio-economic group was not confirmed. But, there appears to have been a decreasing proportion of students from lower status families opting for science relative both to the employee group and their representation in the sample. A significant variable for most groups was the educational level of the father, which was positively associated with the performance of the children. The mother's educational level was identified as the most important determinant of earnings of the children, i.e a higher educational level of the mother was positively and significantly associated with mean earnings of the children.

Sex and regional background were the other two background variables on which information was available. These, however, were in general not very important as explanatory variables.

Sex was important in explaining non-admission at the post-graduate level. Over half of those unable to get admission were females. Women were also under-represented in the science programmes, although this was less the case among the students compared to the employees group.

Sex was not systematically related with academic performance except for the unemployed. Among the unemployed, women had higher academic qualifications than men. The results showed that, in most cases, a constant or significantly increasing proportion of women were pursuing higher education. NWFP was exceptional in revealing a strikingly lower percentage of women attaining higher education. However this situation did improve over time, significantly so at the Master's level.

NWFP was also exceptional in certain other aspects. It had the largest increase in respondents being drawn into higher education from a rural domicile when comparing the students with the employees. In fact, it was the only province for which the percentage of students from a rural domicile exceeded those from an urban one.

A significantly higher percentage of respondents from a rural background were mediocre performers and this tendency was increasing over time. It was inferred that perhaps the gap between urban and rural background preparation for higher education was not decreasing.

There is an undercurrent in the results reported in this chapter concerning the importance associated, either directly or indirectly, to 'merit' in the educational process. The most important reason for non-admission was perceived by respondents to be low marks. A significantly higher number of students relative to employees mentioned this to be the case. This is complemented by the information that for both groups, the incidence of non-admission is significantly lower for first divisioners. This analysis also lends support to the policy of granting admission on the basis of past academic career. Performance in matric had a significantly strong bearing on the remaining performance of the respondents' academic careers. Performance was also inversely associated with mean waiting period and positively with mean earnings.

Choice of subject for the student and employee groups also had a grounding in merit. A significantly higher percentage of first divi-

sioners and a significantly lower percentage of third divisioners opted for science. Reviewing the choice of subject, it was evident that a fair degree of diversification was taking place in the available skill-base over time. The frequency distributions on choice of subject of the unemployed and self-employed showed however a very small degree of such diversification. While this is not essential for the self-employed, it may have contributed to the lack of employability of the unemployed. Another such reason may be their expressed reasons about their demand for education or choice of subject. Meeting the needs of a career or future employment opportunities were ranked very low. The availability of subject and career guidance could improve this situation. Both the demand for such counselling and its availability were reviewed.

Overall, the picture emerging on the demand side did not appear to be alarming. Respondents expressed satisfaction with their chosen field of study at the first degree levels. This feeling of satisfaction continued into higher levels of training. Students as opposed to employees expressed only moderate satisfaction, suggesting some scope for improvement in counselling. The unemployed group was the exception, as almost one-half expressed dissatisfaction with the first degree science programme.

Only two-thirds of the unemployed in the science group mentioned having had the opportunity to discuss career plans with teachers. There was in general a dearth of career counselling facilities, which, therefore, played a very small role in critical choices concerning specializations and subsequent careers. Few had attended institutions that actually afforded them any access to career counselling. In this regard, private institutions were particularly lacking. Provision of career guidance should be made mandatory in all kinds of academic institutions. Even if career guidance was not discovered to be of pressing concern to respondents on the demand side, this does seem to be a case where the creation of demand could fruitfully be indulged in.

The educational institutions limited role in career planning was related to their minimal links with employing agencies. Furthermore, and probably for the same reason, both employees and employers perceived their role in the respondent's attaining a job to be insignificant. The unemployed ranked very highly the need for such links. Surprisingly, both employees and employers ascribed the most importance to newspaper advertisements as a means of acquiring a job.

The lack of proper channels to ease the transition from education to work meant a moderately long waiting period. On average, employees had to wait about eleven months before gaining employment. Most students recommended the arrangement of a temporary job before the post-education permanent job as a means of ameliorating this situation. This could be further explored considering two-fifths of the self-employed were interested in offering summer jobs and one-third had job placement programmes. Hiring on the basis of merit and an assessment of qualifications was also deemed to be important.

About 28 per cent of the employees considered that contacts were of assistance in obtaining jobs. In contrast, only 4 per cent of the unemployed mentioned having any such contacts; the lack of contacts was rated the most important reason for their unemployment. Similarly, of the self-employed who had attempted to seek employment, lack of contacts was indicated as the most important cause for their lack of success. So, even though performance was identified as an important determinant of successful admission, high mean earnings, and a low waiting period prior to a job, other less desirable factors like 'contacts' also operated in the job market. Although there may be some bitterness on the part of the unemployed because of their situation, nevertheless progressively larger proportions of the unemployed have medium and good academic performance. Therefore, this matter deserves some attention. This is also true because more than any other group, the unemployed were from low status families.

The unemployed gave as reasons for their situation, the lack of labour market information, the lack of correspondence between the labour market and the higher educational system, and the absence of a national employment policy. Perhaps, the waiting period could be reduced by a closer correspondence between subject specialization and occupational category. In general, a very low correspondence was found in this respect, although it was stronger for post-graduates than graduates. Despite this, a fairly high degree of satisfaction was expressed by employers concerning employees' job performance. A very high percentage of the self-employed (86 per cent) expressed satisfaction with their work and only 4 per cent considered their educational training as irrelevant to this work. Employees indicated moderate satisfaction with the use of their skills and the professional aspects of their jobs. The employers did appear to be somewhat aware that this was a critical factor for job-satisfaction.

The findings concerning the low correspondence between specialization and job category are reflected in over half the employees requiring on-the-job training. More in the non-science category did so. This is in keeping with expectations since they are not equipped with special skills as are science students. In response to this demand, only 14 per cent of the educational institutions and half the employing establishments provide such training.

While employers thought that better teaching, refresher courses and on-the-job training (in that order) were the solution to improved job performance, employees stressed a manpower planning approach as the solution. Their concern with the remunerative aspects of the jobs was mentioned earlier.

Generally, dissatisfaction with remuneration should lead to a high rate of labour mobility. Surprisingly enough, only a small proportion of employees actually shifted jobs. This could partly be explained by the low average age of the employees in the sample and perhaps partly by the considerable scope for vertical and horizontal mobility that employers contend exists within firms.

Quite a few findings on several issues have emerged as a result of this study. Some of these are of general scholarly interest whereas others may be of interest to policy-makers. In social science research the most pressing issue out of several can be identified by the stated objectives of the study, consensus among scholars, the bias of the researchers or some combination of these. In this case the major objective was to find qualitative evidence about the mismatch between the world of higher education and the world of work.

The focal point of this mismatch among the groups under study should be the unemployed since their predicament is one most worthy of attention from a human and social point of view. Evidence on the reasons for unemployment partly put the blame on the unemployed and partly on social factors. The unemployed as a group showed a poor diversification of skill-base resulting from their choice of subject. They concentrated mostly on non-science subjects, whereas the employees specializing in science based subjects were the most successful in the job market. It is true that a high percentage of the unemployed were discontent with science programmes but, simultaneously, career needs were not considered important as a motivation for pursuing higher education or in the choice of a subject.

Pursuing studies out of interest may explain why the unemployed as a group (both sexes) were largely middle or good performers, with proportionately many more in the latter category. Although, academic performance was identified as an important determinant of success on the job market, for the unemployed this apparently failed. Instead, they pointed to their lack of contacts as the major cause for their failure in acquiring a job. This is perhaps because more of the unemployed belonged to the lower income categories than any other group.

Thus it appears that the unemployed are doubly disadvantaged insofar as they are from poor backgrounds. The findings confirmed the general view that the socio-economic background of students can aid their academic career. If despite being from a poor background students perform well, they still have to contend with discrimination on the job market. This may not be an active policy of exclusion but a lack of contacts has the same objective consequence. Even beyond that, socio-economic background was identified as a significant determinant of earnings among those who did find jobs.

Thus, to even the odds somewhat, apart from making up for the inadequacies in job market information and in the links between the world of work and academic institutions, the hiring process must be rid of any form of discrimination on account of family background. Open advertising and an assessment based on externally graded written tests and academic performance, at least for the public sector, is one recommended solution. A more drastic step, but probably a more effective one, would be to standardize schooling.

ANNEX A

Construction of the socio-economic status variable

The two variables used to construct this index were the income and education of parents. A question on the respondent's father's occupation evoked a very aggregated response, i.e. army, business or farmer. Since each of these major occupational categories contain various gradations, they could not be relied upon for providing adequate information on status. Education and income are generally found to be highly correlated with occupational status and information on these variables was available.

Education of each parent varied between the following six categories: no education, religious/informal, up to secondary, up to higher secondary, first degree, and post-graduate. The combined parents education ranged from 2 to 12. These were reduced to three categories with less than 4 being low, between 4 and less than 8 being middle and 8 and more being high. Equal weight was given to the education of both parents.

Information was collected on the annual income of parents at the time the student was studying. Since the students' study period varied considerably, the income had to be standardized. The year 1976 was used as the base and all income inflated or deflated accordingly. After that, the income was categorized into lower, middle and higher as specified by the 1979 Household Income and Expenditure Survey.

Finally, the two separate indices were merged and the combined index ranged from two to six. Ideally, these five categories should have been retained to allow for differences in categories such as low income/middle education, low education/middle income, middle income/higher education etc. However, for ease of analysis and exposition, two was retained as low, three to five as middle, and six as high. Thus low education and low income was treated as low, high income and high education as high and the combinations as middle.

The consequence of this further aggregation was that the index was very sensitive in picking up differences across the lower and upper status categories. It was obviously not sensitive to differences within the middle group since several permutations were lost due to the lumping process in defining this category. Apart from ease of exposition,

another justification for the aggregation was that from the perspective of a social analyst and perhaps even the planner, the extreme categories are more interesting.

ANNEX B

Table B.1 List of variables used for the performance regression

	Mean	Standard Deviation	Comments
Performance	12.3984	1.6911	See Section 6.4
Sex	0.8493	0.3578	Male/female
Region	0.3343	0.4719	Rural/urban
<i>Parental Educational Background</i>			
Mother/low	0.3173	0.4655	See Annex A
Father/low	0.7202	0.4490	See Annex A
Father/middle	0.2342	0.4236	See Annex A
Parental income	37.2915	67.8084	Annual income in thousand rupees.
Field of specialization	0.3303	0.4704	Science/other
<i>Provinces</i>			
Punjab	0.3323	0.4712	
Sind	0.2683	0.4432	
NWFP	0.2362	0.4249	
Baluchistan	0.1111	0.3143	

These data characterize the employees (the largest) sample. The same variables were included in the regressions for the student, self-employed and unemployed groups.

Table B.II List of variables used in waiting period regression

	Mean	Standard Deviation	Comments
<i>Waiting Period</i>			
Schooling	8.4159	13.4336	months
Bachelor's degree	0.1156	0.3198	
Master's degree	0.7618	0.4261	
<i>Sex</i>	0.8493	0.3578	Male/female
<i>Region</i>	0.3343	0.4719	Rural/urban
<i>Parental income</i>	37.2915	67.8084	See Annex B, Table I.
<i>Age</i>	33.2497	7.6958	
<i>Age squared</i>	1164.7422	681.7079	
<i>Performance</i>	12.3984	1.6911	See Section 6.4.
<i>Parental education</i>			
Father/low	0.3173	0.4655	See Annex A.
Father/middle	0.4429	0.4969	See Annex A.
Mother/low	0.7202	0.4490	See Annex A.
Mother/middle	0.2342	0.4236	See Annex A.
Field of specialization	0.2873	0.4704	Science/other
Work during studies	0.3323	0.4526	yes/no
<i>Provinces</i>			
Punjab	0.2873	0.4712	
Sind	0.2683	0.4432	
NWFP	0.2362	0.4249	
Baluchistan	0.1111	0.3143	

Table B.III List of variables used in earning function

	Mean	Standard Deviation	Comments
<i>Log earning</i>	7.3055	0.6876	Monthly earnings
<i>Schooling</i>			
Bachelor's degree	0.1229	0.3285	
Master's degree	0.7459	0.4355	
<i>Age</i>	33.0115	7.8307	
<i>Age squared</i>	1151.0369	695.2652	
<i>Performance</i>	12.4866	1.6815	See Section 6.4.
<i>Parental income</i>	37.9734	64.3862	See Annex B, Table I.
<i>Sex</i>	0.8408	0.3660	Male/female
<i>Field of specialization</i>			
Basic Sciences	0.2994	0.4581	
Engineering and technology	0.0019	0.0437	Alternative
Agriculture	0.0013	0.0357	specifications
Humanities/social sciences	0.4955	0.5001	used were
Teaching	0.0006	0.0252	Science/other
Health and medical	0.0	0.0	and corresponding
Law	0.0013	0.0357	occupational categories.
Region	0.2873	0.4526	Rural/urban
<i>Provinces</i>			
Punjab	0.3599	0.4801	
Sind	0.2968	0.4570	
NWFP	0.1503	0.3575	
Baluchistan	0.1350	0.3419	
<i>Parental education</i>			
Father/low	0.2834	0.4508	See Annex A.
Father/middle	0.4573	0.4983	See Annex A.
Mother/low	0.0943	0.4609	See Annex A.
Mother/middle	0.2599	0.4387	See Annex A.

Occupational categories

Basic sciences	0.0382		
Engineering and Technology	0.0675	0.1918	Specified as
Agriculture	0.0070	0.2510	alternatives
Humanities/social sciences	0.0051	0.0834	to run with
Teaching	0.4064	0.0712	field of
Health and medical	0.0127	0.4913	specialization.
Law	0.0108	0.1122	

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7. Principal findings and implications for the planning of higher education in Pakistan

The previous chapters discussed the different aspects of the relationship between higher education and employment in Pakistan. In this last chapter, the principal findings will be recapitulated and some implications outlined for the planning of higher education in the country.

7.1 The economic context

Regional distribution of population and natural resources are very uneven but the fertile Punjab and Sind ensure that Pakistan is self-sufficient and even an exporter of food. Baluchistan with its oil and gas resources has undergone rapid development recently but generally the country has only basic manufacturing industries and the trade balance has over the past two years deteriorated due to the need to import fuel and machinery. The Sixth Plan (1983-1988) intends to mechanise agriculture, encourage basic metal and agro-based industries and promote forestry for energy purposes.

7.1.1 Implications for planning

The Sixth Plan will continue to emphasize the education of engineers and technicians, and specialists in science and mathematics, but within the framework of more or less static financial provision. Hence there will be a need to estimate more carefully the intake of graduates in the various fields of study. In addition, the need to widen the manufac-

turing sector in order to produce some of the machinery at present imported implies the training of more *entrepreneur* engineers, technicians, etc.

Regional disparities resulted in rural graduates encountering more problems in obtaining posts because they had few contacts in the urban areas—even some of the very able had not been able to find jobs. Thus a mechanism is needed to assist particularly these students in finding employment.

7.2 The social context

The low level of female participation in the labour market and education system improved little over the period studied. A finding of the survey was that the level of success of graduates/employees correlated with the level of education of the mother. Also in the case of the few women in the sample who had obtained employment as doctors and teachers, salaries were higher than for their male counterparts, i.e. the women who succeed through the system are very able.

7.2.1 Implications for planning

To improve the educational environment for all children and to ensure that the most capable and talented people are available for development of the country, policies should be formulated to encourage female participation in education and work.

7.3 The labour market

The labour force participation rate was low—it has even decreased slightly from 31% to 30% over the period 1960-83, despite the growth in the manufacturing sector of 10% p.a. 53% of the labour force are employed in agriculture so that the majority of the available manpower is unskilled and rural. In addition, part-time and self-employment are widespread.

Looking at the trend in sectoral employment, one finds that there is a continuous shift (but at a decreasing rate) of the labour force from agricultural to industrial employment. Whereas this tendency was very

visible in the decade 1951-61, it was much less marked in the subsequent period 1961-71. The structural change in the economy has been a limited one.

However, the share of agriculture in GDP has declined from 35 per cent in 1973 to 29 per cent in 1983. In the same period the shares of the manufacturing (from 16 per cent to 18 per cent) and services sectors (from 42 per cent to 44 per cent) increased.

The rates of open unemployment reveal a clearly increasing trend in the 1970s, from 1.7 per cent in 1974/75 to 4 per cent in 1982/83. These people are mainly the educated, i.e. those who register. In 1982, 5,000 post-graduates (3 per cent of the 160,000 employed post-graduates) and 12,000 1st degree graduates were unemployed. Pakistan, like most of the developing countries, faces the phenomenon of simultaneous co-existence of surplus as well as shortage of educated manpower—while there are a large number of graduates seeking work there is also an acute shortage of trained and qualified teachers at all levels. This situation will be exacerbated by the expansion of primary education under the Sixth Plan.

A particular feature of the Pakistani labour force is the relatively large proportion which migrates abroad—in 1981, 1.7 million were abroad (5 per cent of the total). 71 per cent of these were skilled production workers and 4 per cent professional (mainly doctors, engineers and accountants). The latter represent about 8,000 in all of which half were in the Middle Eastern countries. H3. Implications for planning The Sixth Plan continues to emphasize expansion of study of science and technological subjects and engineering. For example from 1974-75 to 1981-82 enrolment rose fastest in engineering and technological subjects. There is an urgent need for an in-depth study to estimate the *real* need for science graduates in Pakistan during the years to come. The present study does not provide any convincing evidence in either direction but we have some valid grounds for making, at least, conjectures that increased demand for science education, as experienced in the past, was a temporary phenomenon. It was noted in the present study that students are now showing a preference away from science subjects. It is partly due to poor previous results and other financial and non-financial difficulties in following scientific studies. It may be a reaction to the growing unemployment problems amongst science graduates.

Further, there is a strong probability of new inflow of scientific and professional personnel from the Middle Eastern oil producing countries where demand for such workers is shrinking due to a decline in oil prices and consequent limitations on economic activities. Any planning for future expansion of science education must take this fact into consideration.

The recent structural changes in Pakistan's economy (i.e. a relative rise in manufacturing and service sectors) may provide some openings for professional and technical persons, but, as things stand, these sectors can help *only to a limited extent*. First, modern industries have been more capital intensive and thus have not created enough jobs. Second, though manufacturing and service sectors have grown relatively faster, their growth has been very modest. In the light of the above facts, three measures can be proposed to avoid unemployment problems among the highly educated. First, the restriction of enrolments envisaged in the Sixth Plan might also be applied to the supply of science graduates. Second, one may plan to accelerate the existing process of structural change in the economy so that (a) there is sufficient growth of the modern manufacturing sector and (b) new industries are not too capital intensive. Three, graduates are provided with incentives to take up teaching careers. It must be emphasised that no one of these measures will be sufficient in isolation. It will be necessary to apply simultaneously all these devices at national level.

7.4 The educational system

In Pakistan, the education sector has been neglected and very limited resources were allocated in public budgets. It is a healthy development that the Sixth Plan makes better provision and proposes an allocation of Rs. 19.85 billion in the Education sector compared to the much smaller actual Fifth Plan allocation of Rs. 5.5 billion. These increased resources, though not sufficient, will, however, permit a quantitative expansion at the primary level and qualitative improvement at higher levels. It will ensure far greater allocation of resources in future for education than was spent in earlier plan periods.

By the latter half of the 1970s, the relationship between education and unemployment took the form of an inverted U shaped curve. This pattern is characterized by low unemployment rates at both ends of the

educational spectrum i.e. for the sub-group with no education and those with a graduate or post-graduate degree. While unemployment rates have registered an increase for all educational groups, there is a marked decline in that for the most highly educated class. A possible explanation for this declining trend could be large scale migration of highly skilled manpower to the Middle East from the mid 1970s onwards. This suggests once again that a better comprehension of emigration to the Middle East is of special interest for developing future policies about education and employment.

7.4.1 Higher education

The secondary data shows a tremendous growth in enrolment in higher education between 1974/75 to 1981/82. The highest growth was in engineering and technology and even growth rates in basic sciences were greater than for general arts students. Given the concern with science among educational planners, this could be viewed as a positive development. Of course, this development, along with others, has to be viewed from the perspective of the findings viz-a-viz the education market (see section 7.3 above).

There have been other positive developments in higher education over the last decade. Some satisfaction can be expressed as regards staffing. University level pupil-teacher ratios declined, and even where they rose, in all cases they were below the average of those for a group of upper middle income countries for which data were available. It is also evident that the qualifications of the teaching staff have improved in so far as the percentage of total staff with doctorates has increased. The fact that retention rates have risen at the Master's level in most subject areas could be viewed as another positive development of the higher educational scene (those for the Bachelor's level showed little change). In the event, the higher enrolments in the technical fields resulted in an increased output of graduates in these subjects and a corresponding decline in output in the general arts fields.

However, not all was well with higher education. Apart from two technical universities, access provided by most university libraries to recent journals remained unchanged in some cases and sharply declined in others. The results of a sample survey showed the least satisfaction being expressed with regard to the availability of research facilities. Furthermore, there were large disparities between institutions of higher

education with regard to the calibre of the staff and their access to good libraries and research facilities. The improvement in qualifications of teaching staff has been insufficient as regards the technical universities—in 1981 only 7 per cent of Engineering teachers had attained a Ph.D. and some universities had no teachers of this level (as against a third elsewhere). In addition technical university staff were the least satisfied with opportunities for refresher courses. This situation had evident repercussions on the results of students i.e. the lower 30 per cent retention rate of MA students in technical subjects.

There are other disparities in higher education of which planners have shown an awareness but which have persisted. These include imbalances in regional and gender participation rates. Findings of survey data show that over time there was a decrease in the percentage of students being drawn from a lower or middle socio-economic group relative to the higher one. Also, the upper income bracket (relative to the distribution in the population as a whole) was over-represented in higher education while the lower income bracket was under-represented.

7.4.2 Implications for planning

The determination expressed in the Sixth Plan to reverse the development of an inverted education pyramid should be given every chance to succeed. The programmes for the establishment of 'Centres of Excellence' and reinforcement of higher educational research institutes also deserve strong support. Monitoring of their performance should also be institutionalized. Library and laboratory facilities should be improved to raise the quality of higher education and more opportunities given for refresher courses to teachers in the technical fields.

Given the fact that under the Sixth Plan, little new finance will be available to higher education, some new sources of support should be sought. The private sector, particularly enterprises, etc., might be encouraged to participate in the financing of education and research, especially applied research. Another possibility is to charge tuition fees selectively to those families that can comfortably afford to bear such expenses. Subsidized or free education should be provided only to a limited number of those students, mainly qualified students but coming from the economically weaker sectors of society—girls and rural students.

7.5 Career guidance

Little was done in the way of career guidance in three quarters of the higher education institutions surveyed. In fact 80 per cent of all students/employees had decided on their career before entering university (influenced 50/50 by parents and their own inclinations). However, only 50 per cent of the unemployed had made a decision before entering university and the self-employed had decided to launch out on their own very late in their academic studies. The latter two groups were mainly Humanities students and had more divergent career possibilities open to them and were thus in need of counsel.

Science takes the ablest students. The Science option depends on high matriculation results and these students had all received advice and discussed career plans with their teachers.

However, as a group all the students wished to have career counselling, literature, employment agencies and links with employers whilst at university.

7.5.1 Implications for planning

More information on the labour market is required which could be circulated to universities by the central Ministry responsible. One member of each faculty might be designated as a resource person to provide such informations to students, to link up with local enterprises and invite visits from prospective employers, as well as stimulate possibilities for vacation jobs and training. This matter is discussed further in the section on transition to the world of work.

7.6 Transition to the world of work

It was found that a good deal of importance is attached to the role of 'merit' in the higher education process and in the market: Most respondents considered low marks the most important cause for non-admission to the various levels of higher education. Since a larger proportion of students than employees believed this, it appears that over time more students are perceiving merit as playing a role in higher education. In fact, independent confirmation was tentatively established for such a view by the use of more objective statistical techniques. Thus

performance in the matriculation examination was a very important predictor of future performance. Furthermore, the better the study performance, the less time students waited on average before obtaining a job after obtaining their degrees and the greater the average salary that they earned. Choice of subject also had a grounding in merit. A significantly higher percentage of first divisioners and a significantly lower percentage of third divisioners opted for science.

Various means are being used to assist the transition from education to work. Newspaper advertisements were found to be the most important method (60 per cent of the employed but 95 per cent of the unemployed).

Educational institutions played only a limited role in career planning. This is perhaps due to their lack of links with enterprises and other employers. Most students recommended the arrangement of work experience as part of the education programme, as a means of improving the transition process. Employers (particularly the self employed) also felt that there was a need for establishing better links between students and prospective employers.

It was found that 57 per cent of the students surveyed would like to have a temporary job arrangement before taking a permanent job. Another 7 per cent wanted links between employers and educational institutions. Approximately two-fifths of the self-employed showed a positive interest in offering jobs to students during vacation periods to enable them to acquire practical experience. All these figures suggest that there is an implicit or latent desire to establish better links between employees and employers through training programmes. Present provision for on-the-job training is inadequate—only 14 per cent of total educational institutions provided such facilities. It seems that training during studies is a case where the meeting of a new demand could fruitfully be attempted.

Family or political contacts were considered important factors in obtaining a job. In analyzing the responses of the unemployed, it did appear that their lack of contacts had some bearing on their inability to attain a job. Only 4 per cent of them mentioned having 'contacts' whereas 28 per cent (probably an understatement) of the employed cited contacts as an important means of success on the job market. Even those among the self-employed group who were unable to get regular employment, mentioned the lack of contacts as the most important reason for their failure. The unemployed being generally medium

to good performers and disproportionately from the lower socio-economic category lends credence to their views on the functioning of the job market.

Apart from their lack of contacts, the unemployed blamed the government, lack of labour market information, and the lack of correspondence between the labour market and the higher education system for their predicament. There was indeed a very low correspondence between employees' subject specializations and the occupational categories eventually attained.

7.6.1 Implications for planning

In order to combat the depressing prospect of unemployment, universities should take the initiative to collaborate with industry with a view to reconciling education with training in a mutually beneficial way. This would also open up a two way channel of information: students will come to know about potential employers and their needs and employers will come to know about their future employees, particularly their personal characteristics. The role of socio-political contacts in finding a job might also be reduced.

Pakistan has a tradition of self employment and small business which could be encouraged amongst graduates by providing short courses during the final year of studies concerning business opportunities and management. Returning migrants—who have already shown themselves to have initiative and they may already have accumulated some capital—should also be offered such courses to acclimatize them and start them on their careers in their home country.

7.7 Manpower and educational planning

In the past several attempts have been made to relate manpower needs and education. However due to lack of data and a comprehensive employment strategy, manpower planning has not yet been integrated with overall planning work. It is estimated that the size of the available labour force will be 31.42 million in the final year of the Sixth Plan. However, there is no means of estimating whether supply will match needs. At present, BA level graduates (with some exception of engineers and technical graduates and not generally at the higher level of

MA and Ph.D) take jobs which have little relevance to their areas of studies. This is not unusual and demonstrates a desirable flexibility in the work force. However, they must take a longer time to adapt and learn on the job and there must also be more uncertainty in applying for posts, as substantiated by the fact that the job search takes 10-11 months.

7.7.1 Implications for planning

Although manpower forecasts have a lot of limitations which make their use for educational decisions less helpful (and the forecasts given in this study are also subject to these limitations), it is believed that they can provide decision-makers in higher education with some broad directions. It is therefore recommended that such exercises be undertaken in Pakistan with a built-in mechanism of evaluation of their validity and consistency in formulating admission policies for higher education.

We shall conclude this section with a note on the need for research to derive further implications for higher education in Pakistan. Pakistan cannot remain a silent observer of scientific and technological development taking place around the world. The country has to develop its local technological capability and this would have important implications for the structure of employment and qualifications. The system of higher education of Pakistan today has to be ready to respond to the new needs for qualifications without ignoring the consequences on employment. This calls for further research in identifying the precise role which higher education can play in the development of scientific and technological capability.

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How has the educational system responded to the needs for skills in the socio-economic development of Pakistan? What is the nature and extent of the problem of educated unemployment in the country? What are the determinants of demand for higher education? How does the education system respond to meeting the expectations of the students on the one hand, and enterprises on the other, and what is its role in helping students to obtain jobs? To what extent are the careers of the graduates influenced by their academic performance? What are the alternative delivery systems of education for meeting the needs of the world of work?

Based on a socio-economic and educational survey of the country and data collected from 2,671 employed graduates, 1,489 final-year university students, 260 unemployed graduates, 201 self-employed graduates, 146 academic institutions and 299 enterprises, the report attempts to answer the above questions.

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